AMERICAN

NOVEMBER • 1953

Cinematographer

THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY

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AMATEUR

In This Issue . . .

- Production Planning
- The Story of Natural Vision 3-D
- Extension Tubes In Cine Photography

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Preparing to "put the show on wheels."

Scene: Spacious Pasadena Winter Garden, home of TV's "Frosty Frolics." Stagehands arranging set for number in this "icetravaganza."

Du Pont 824B Film Puts "Live" Quality into "Kines" of Popular TV Ice Revue

Premiering as a summer replacement only two years ago, "Frosty Frolics," produced by Paramount's Station KTLA, Hollywood, Calif., today is one of the top TV "drawing cards" on the Coast. Television's only musical comedy on ice, the "Frolics" show has grown so popular that it's now being kinescoped for many West Coast and Southwest stations.

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THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY
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●

ON THE COVER

HIND SIGHT: Aluminum box, high on tail of DC-6B Mainliner, held the Cine Special camera which photographed striking views for "A World in a Week—California," new 16mm motion picture released by United Air Lines. Here Ed McGlone inserts camera in the box, from which it was operated by remote control inside the plane. Kirt Miller (left), United engineer, and Ted Cate, partner in Hollywood firm of Cate & McGlone which produced the unique color film, watch the proceedings.—*United Air Lines photo.*

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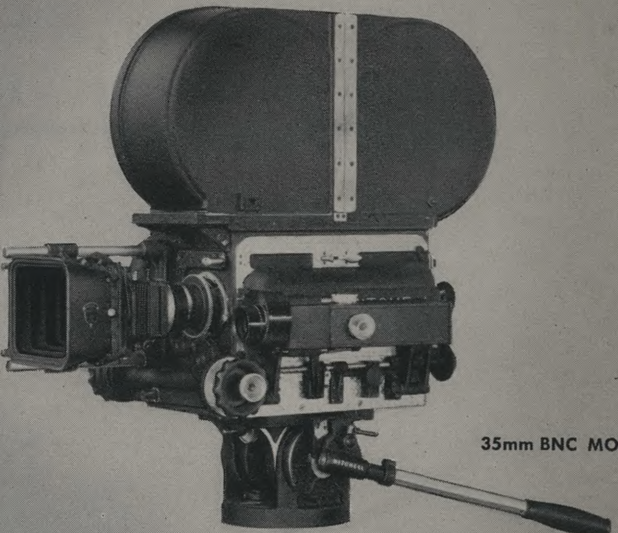

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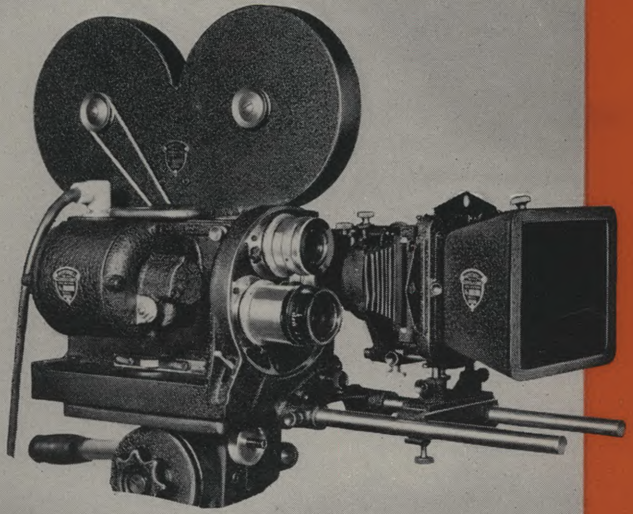

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Hollywood
Bulletin Board

DRAGNET'S Jack Webb, guest of the ASC last month, thanked the Society's members for guiding his organization in filming its popular television film series.

PHIL TANNURA (right) shows George Burns, also an ASC guest last month, the ASC's Wall of Fame where hang photos of Society members who have won "Oscars." Tunnura films the B & A show.

WINTON HOCH, ASC, who earlier this year was signed by Cinerama to head its photographic research department, is currently directing the photography of Warner Brothers' "A Star Is Born," which brings Judy Garland back to the screen.

•

RALPH STAUB, ASC, has severed connections with Columbia Pictures and is now associated with comedian-producer Ken Murray in a new TV film project. For many years Staub headed Columbia's short subjects department.

•

HAROLD STINE. ASC, who has been photographing the "Superman" series of TV films, is currently photographing the new "Lassie" telepix series for Robert Maxwell Associates at Goldwyn Studios, in Hollywood.

•

MACK STENGLER, ASC, following windup of recent series of "Liberace" TV films for Guild Films, Inc., is currently photographing a new half-hour TV film series, "Life With Elizabeth," also produced by Guild.

•

MORE AND MORE major studios are developing motion picture cameras having horizontal film travel for making wide-screen movies without need for special anamorphic lenses. Although MGM was first to develop such a camera, Paramount is first studio to go into actual production with one.

•

TECHNICOLOR CORP., at same time, has geared its labs to handle the film from "horizontal" cameras. Company recently developed a new and improved Technicolor dye transfer color motion picture release print having greatly increased definition and freedom from grain.

•

THIS MONTH, Hollywood celebrates the 50th Anniversary of its motion picture industry. At the same time, *American Cinematographer* celebrates its 33rd Anniversary with this month's issue.

•

ARNOLD & RICHTER, manufacturers of the Arriflex camera, new models of which will be exhibited at the ASC's November meeting, have developed a single-system magnetic sound model, two of which are presently in use in Africa, according to Kling Photo Supply Corp.

•

GENERAL TIGHTENING up of production in the major studios in Hollywood has resulted in a reduction of feature films made this year compared to 1952. As of the end of October, according to the trade paper *Daily Variety,* Allied Artists started 20 this year, 25 in 1952; MGM has shot 22, this year against a total of 36 last year; Paramount, which shot 17 last year, has started only 10 this year; Republic, with a total of 15 pictures for 1952, are only two behind this figure; Universal-International has turned out 13 so far this year as against 15 for same period in 1952; 20th Century-Fox, which had a total of 23 pictures in the can on October 30th last year, had completed only 17 when the studio closed down production four weeks ago. Warner Brothers show 13 this year against 15 for same date last year.

MARK ARMISTEAD, ASC, head of camera rental agency bearing his name and situated on the Samuel Goldwyn lot in Hollywood, has purchased the remaining Natural Vision 3-D camera equipment from Milton Gunzberg. Included in the purchase are five 3-D camera blimps and four Mitchell cameras. This gives Armistead a total of five complete 3-D camera units for rental purposes.

Natural Vision's disposal of cameras is result of company bowing out of the camera rental business. Move now makes Armistead leading source of rental 3-D cameras on west coast.

•

R. D. PESTONJI, (left) president of Far East Films, Ltd., Bangkok, Siam, was a Hollywood visitor last month. During his visit to the ASC clubhouse, Tom Tutwiler, who photographed a color production for Mr. Pestonji two years ago, showed him an old museum piece—an early day Pathe camera.

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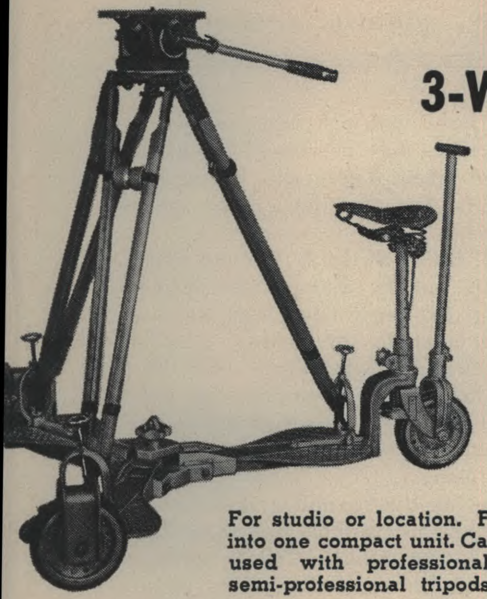

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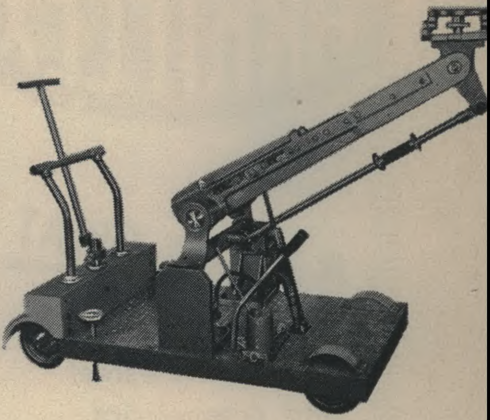

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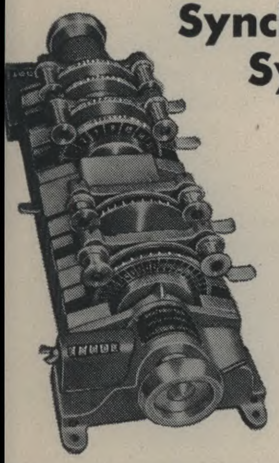

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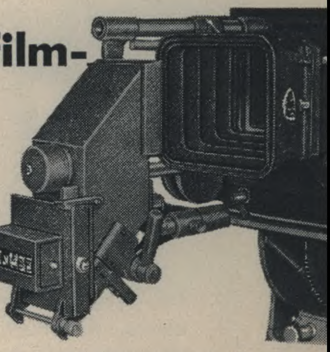

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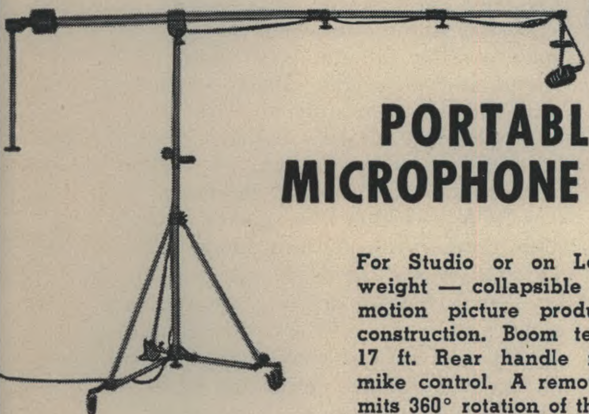

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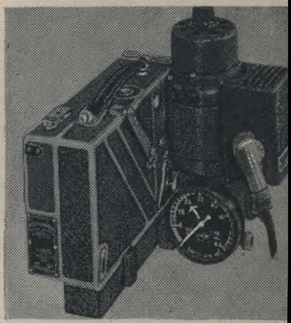
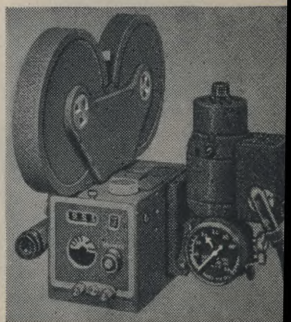
for Cine Special or Maurer Cameras





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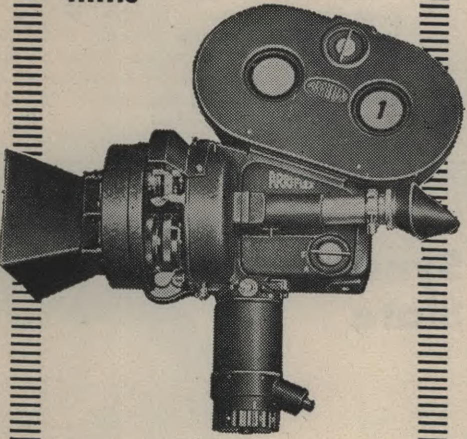

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CLOSEUPS

Notes and editorial comment

The first entry blank to be received in American Cinematographer's forthcoming 3-D Film Festival for 16mm stereo motion pictures was from J. S. Frieze of London, England. The first film entry to be received was from Mr. and Mrs. Lloyd N. Sanford of San Diego, Calif.

If letters of inquiry received to date are any criterion, foreign entries will equal those from within the United States.

Because of the unusual interest in the festival emanating from such countries as South Africa, Hawaii, Mexico, England, and Australia, the Festival committee has set back the deadline date for entries from December 1st to December 15th.

The Festival showing of films is tentatively scheduled for the ASC Clubhouse in Hollywood in January. Members of the American Society of Cinematographers who have photographed 3-D pictures in the major studios will make up the panel of jurors who will evaluate the film entries and make the awards.

There is an entry blank on page 547 of this issue for readers who are interested in submitting films for the Festival screenings. Both amateurs and professional 16mm film makers are invited to participate.

★

On the day we went to press with this issue, the National Broadcasting Company in its new studios in Burbank, California, unveiled for the film and TV industry and the press its new compatible color television system. More about this achievement will appear in our next issue. What we want especially to mention at this time is the significant announcement made at that meeting by David Sarnoff, Chairman of the Board, Radio Corporation of America. Said Mr. Sarnoff: "Now I will let you in on a secret. Our men already have achieved recording of color as well as black-and-white television programs on magnetic tape."

In announcing the achievement of video tape recording, Mr. Sarnoff said that electronic motion pictures and even home movie recordings on tape are future possibilities that will stem from this development. He described it as holding great promise for the motion picture industry. Recording and reproducing motion pictures, with no intermediate steps such as film processing, will do away with all chemical processing. Pictures may be viewed the instant they are taken. There will be no need to wait for the next day or days to see the "rushes."

Until the NBC-RCA announcement, the Bing Crosby Enterprises developments in this field have been the only ones to come to the general attention of the film industry. Now, with RCA solidly behind the development of video film recording, its practical use in motion picture production is probably not too far away.

Following the Sarnoff announcement, many cinematographers and other technicians in the industry fell to speculating on the future of the motion picture cameraman, once electronic picture recording becomes a reality in Hollywood.

It is safe to say that the motion pictures of that era will depend on artistic lighting, good composition and skillful camera handling as do pictures today. The only thing that will be different will be the camera itself.

★

One cannot help noticing these days the steadily improving quality of both the photogaraphy and transmission of TV film shows. For this, considerable credit is due both the directors of photography and the engineering fraternity of the television networks. Both have worked steadily toward a common goal—that of improving the picture quality of film shows reaching home receivers. We refer here to film programs made especially for television, not old theatrical films.

★

Progress toward the development of television studio equipment designed to make possible the airing of filmed programs and especially filmed commercials with all the quality of "live" pickups is evident in still another recently annouced accomplishment of Radio Corporation of America engineers. A new RCA television film camera (which picks up the projected film image at the TV station and sends it out over the air), expected to go into production early next year, will provide picture quality in TV films comparable to live pickup performance, according to RCA engineers.

Making this possible is a new, smaller TV camera tube, three times more sensitive than those used heretofore.

—A.E.G.

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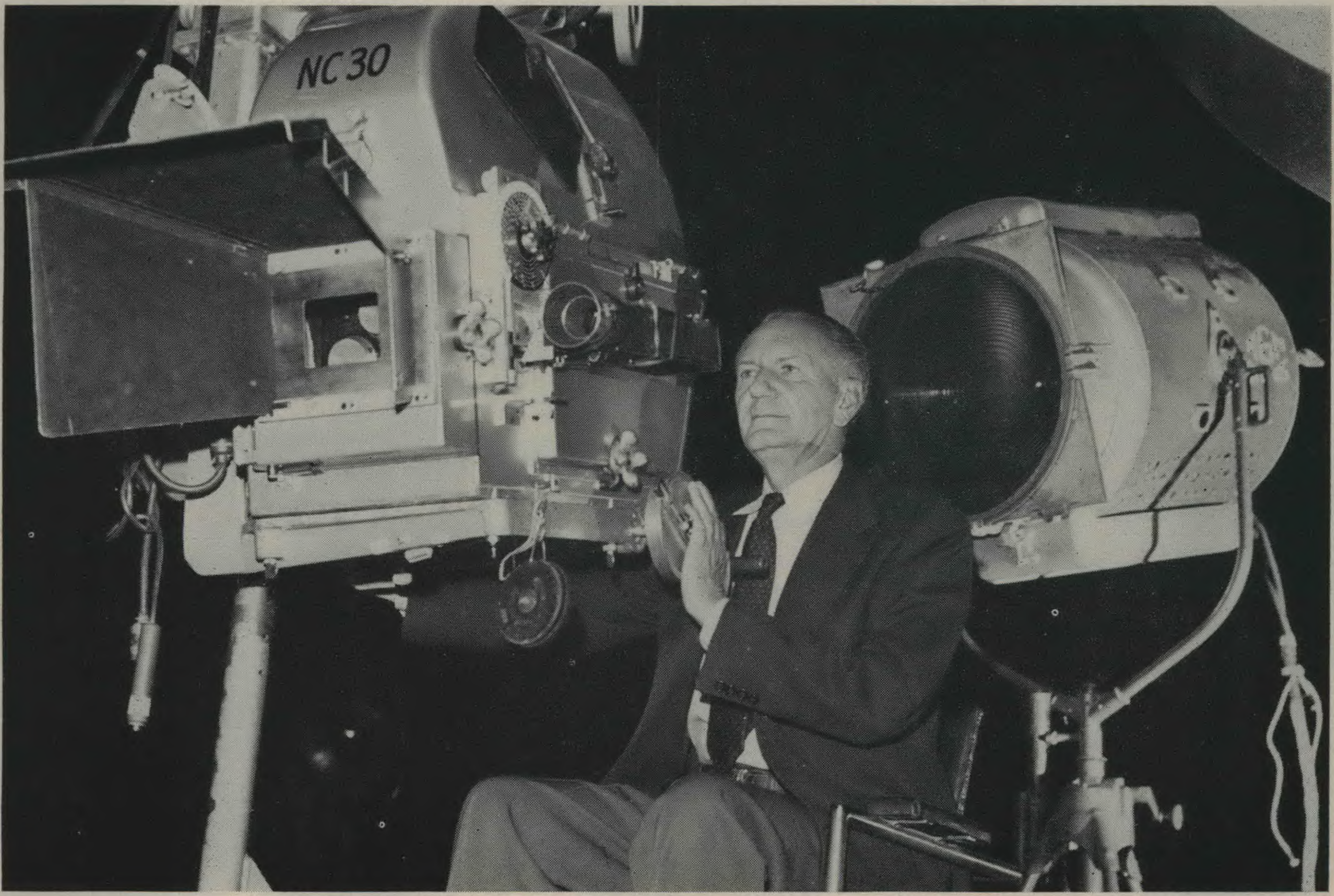

MGM Operator, John Schmitz, shooting Ansco Negative-Positive Color with standard 35mm studio camera equipment.

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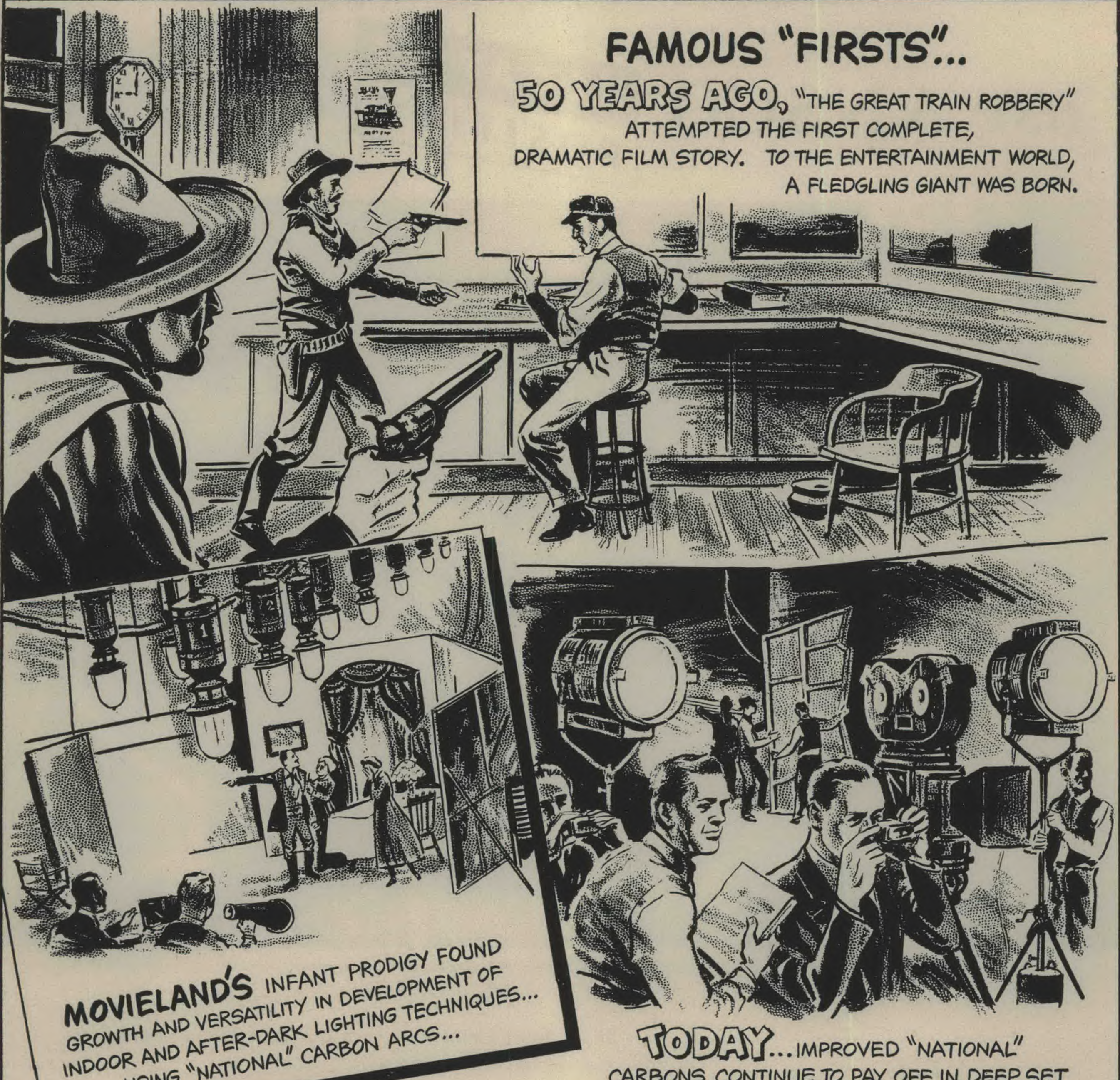

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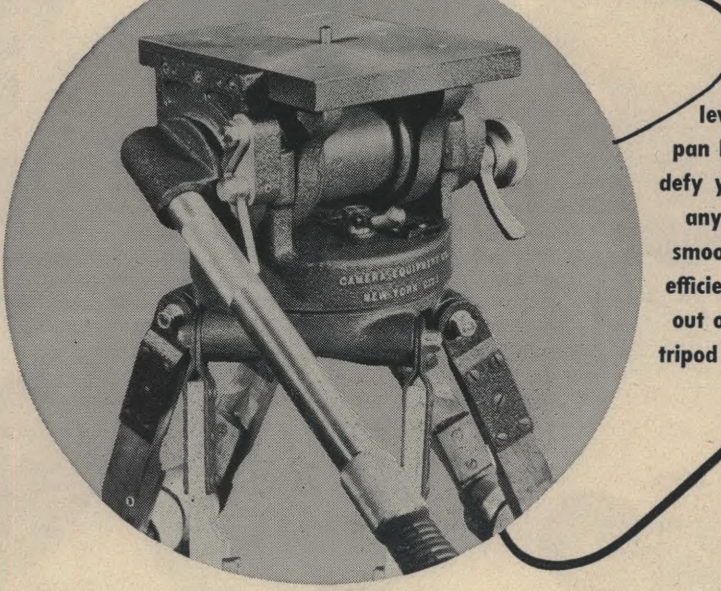

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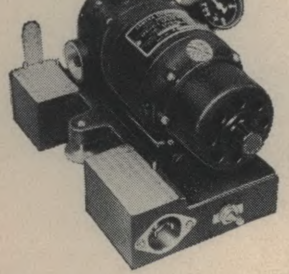

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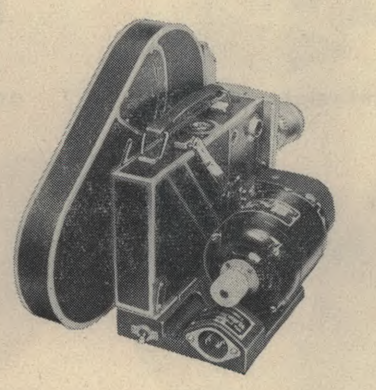

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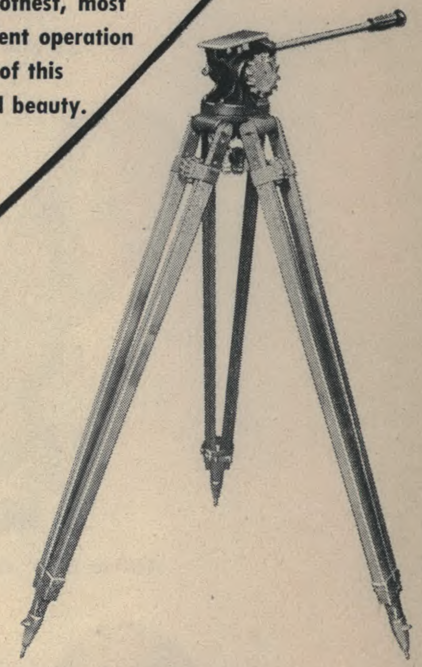

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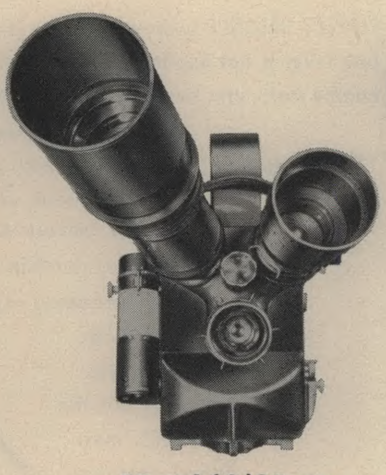
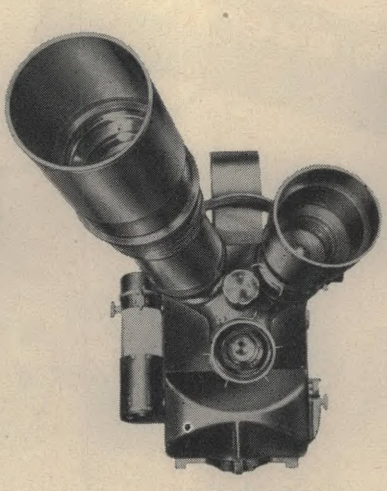
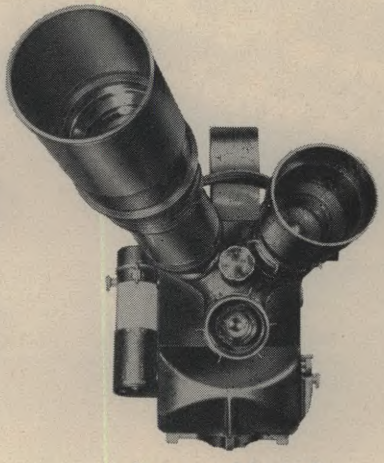


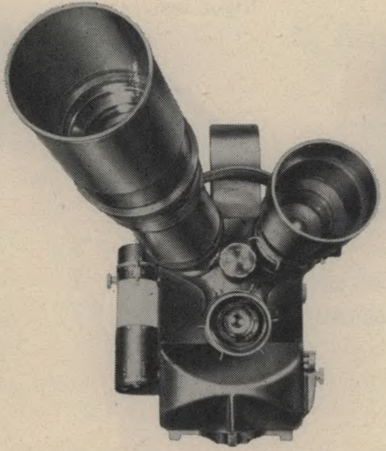
35 and 16/35 mm



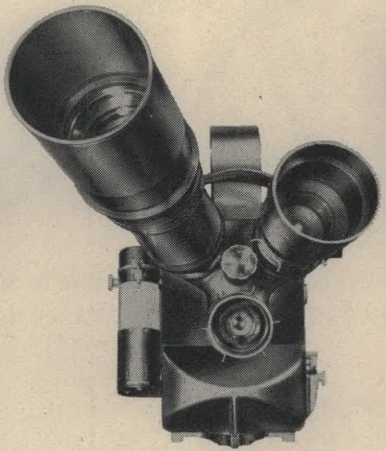
reflex viewing



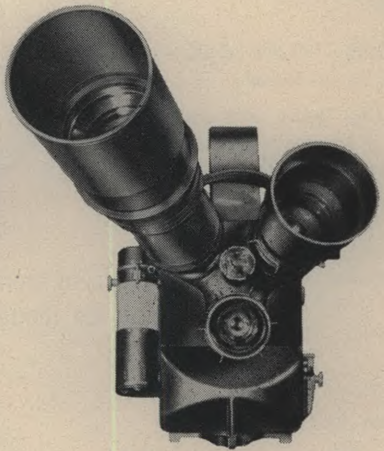
divergent turret



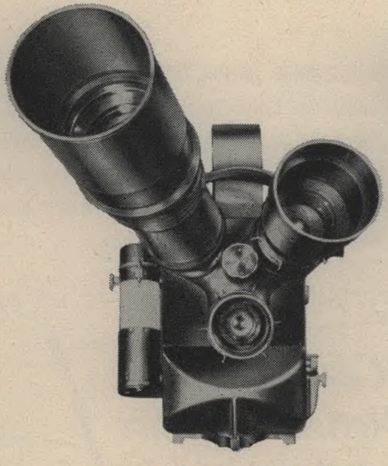
40° to 200° adjustable shutter



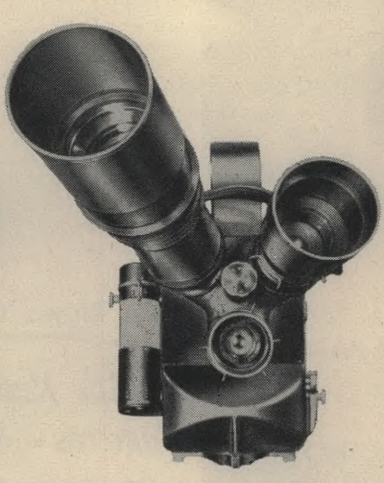
lightweight—14 lbs.



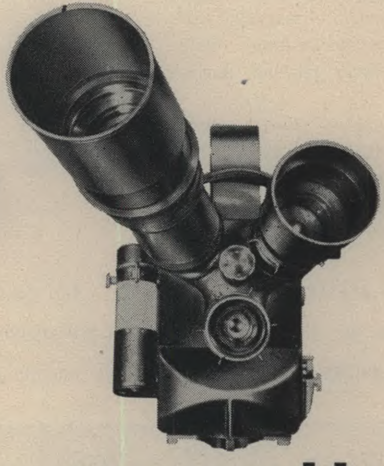
100′ to 400′ magazine



instantaneous loading



dovetail mounting



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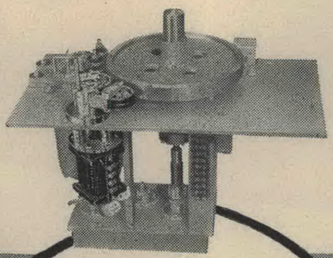
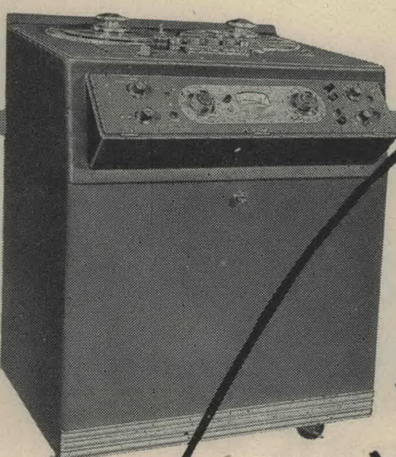
With built-in patented Syncroll Drive and Pic-Sync Attachment the Fairchild model 126 Professional Tape Recorder provides a standard of performance, convenience and real cash savings otherwise impossible to achieve. Recording all sound takes on Pic-Sync tape gives you virtually "live" quality for dubbing to film. With this unbeatable combination you can also provide a low cost safety on tape...make synchronous sound tracks for existing film...save film cost in Kinescope recording for TV...have immediate playback.

Fairchild Model 126 Professional Tape Recorder (below) with patented Syncroll Drive and Pic-Sync Attachment (right) installed within console.





only the FAIRCHILD magnetic tape recorder offers all these EXCLUSIVE FEATURES

- Syncroll Drive insures exactly synchronous tape speed, gives accurate program timing, on-pitch reproduction. • Pic-Sync Attachment (optional) corrects for tape stretch, shrinkage, provides absolute lip synchronous timing. • Automatic Framing Control (with Pic-Sync) brings recorder into frame with projector or other equipment, regardless of difference in starting times. • Oversize Capstan with 180° tape wrap eliminates slippage. • Highest Signal-To-Noise Ratio assures minimum distortion in recording and dubbing.

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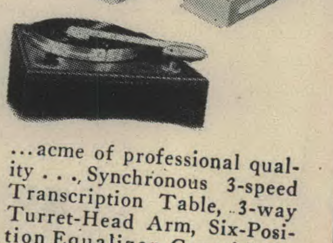

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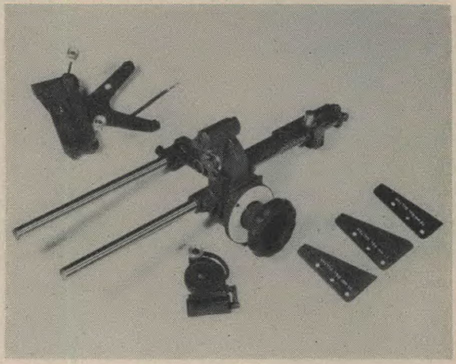
What's New...

In Equipment, Accessories, Services

Follow Focus Attachment— The new follow focus attachment for NC, Standard and 16mm Mitchell cameras is designed for use in action shots moving toward or away from the camera. It assures full control of picture framing and lens focusing, particularly at close, critical ranges.

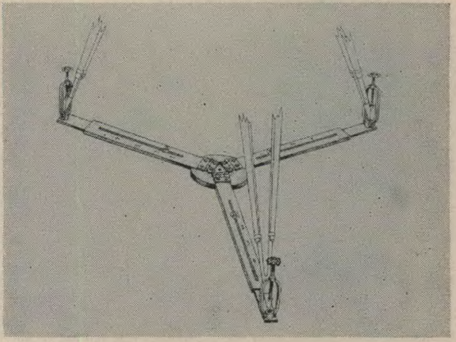


Once the follow-focus attachment is fastened to the camera, all follow-focus control is accomplished through the use of one focus control knob, which saves considerable production time.

The attachment is supplied in kit form, is easy to install and remove, and does not interfere with use of all standard Mitchell camera accessories. Attachment is supplied complete with bracket for attaching to matte box.

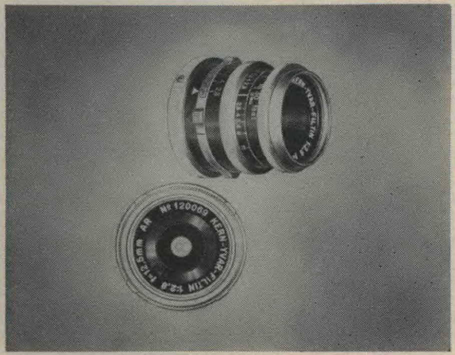
Full information and price is available by writing Mitchell Camera Corp., 666 West Harvard St., Glendale 4, Calif.

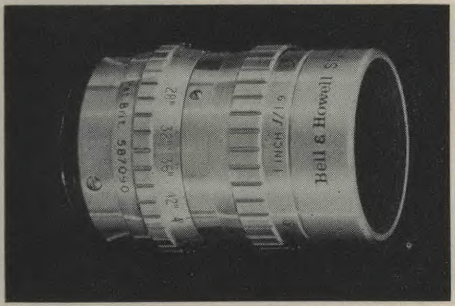
Leg-Lok Triangle—Florman & Babb, 70 West 45th Street, New York, N. Y., announce the F & B Leg-Lok camera triangle which features special clamps that prevent tripod legs jumping out of place when triangle is moved. Camera-mounted tripod and triangle may be moved easily by one man alone. Still another feature is the large engraved numerals on each extendable leg of the triangle for quick and accurate levelling. Of sturdy aluminum construction. Leg-



Lok Triangles are easy to transport, and may be clamped on roof of station wagon.

Built-in Filters — Paillard Products, Inc., 100 Sixth Ave., New York 13, N. Y., announce an interesting lens for 8mm cine cameras tradenamed "Filtin." As the name suggests, this is a lens having built-in filters. The half-inch f/2.8 lens has one yellow and one red filter for B&W films, and one "Daylight" conversion filter and one "Skylight" filter for color films. Filters are mounted inside the lens housing on a turret. Between each filter there is an opening for use when shooting without a filter is desired. Lens, which has click-stops and depth-of-field scale, retails for about $75.00. Deliveries start after January 1st.

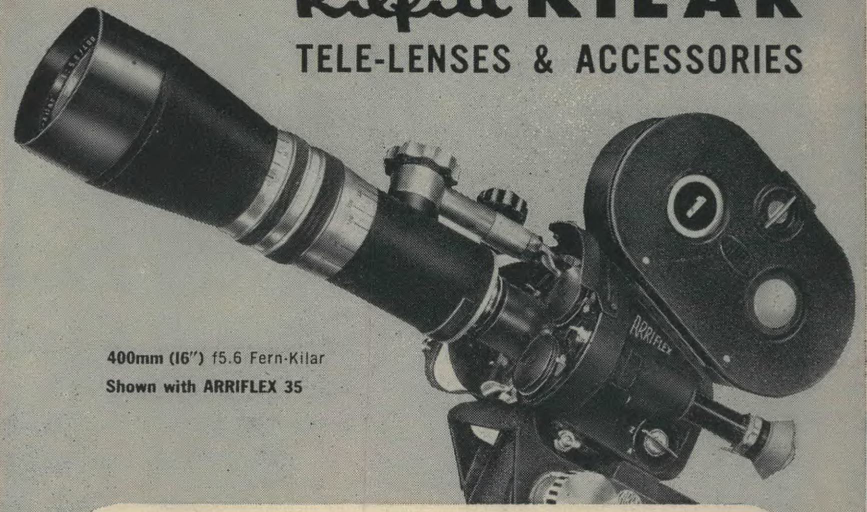




New Cine Camera Lens — Bell & Howell Co., Chicago, Ill., announce a new 1" f/1.9 Taylor & Hobson lens for 16mm cine cameras. New anastigmat lens replaces previous super comat lens of same size, and will be standard equipment on all Bell & Howell 16mm cameras ordered with 1" f/1.9 lenses. Features include built-in sunshade, and depth-of-field scale. Price is $86.95, including F-X tax.

CinemaScope Splicer — Neumade Products Corp., 330 W. 42nd St., New York, N. Y. announces the Neuscope splicer, especially developed for use with CinemaScope film. Until now, splicing CinemaScope film has meant a double operation—removing film from splicer plate in midst of making the splice, turning it over and scraping the sound tracks from the back.

Kilfitt KILAR
TELE-LENSES & ACCESSORIES



400mm (16") f5.6 Fern-Kilar
Shown with ARRIFLEX 35

For the BEST in Movie Tele-Photography

Cinematography demands the best in optical performance. Long shots, medium shots, close-ups . . . each must be equally sharp and clear as if taken with one lens. One scene marred by poor quality dooms an entire sequence. That is why so many of the leading professional cinematographers rely on Kilar lenses.

Kilar lenses are highly color corrected. They are entirely free from haze or flare, even at widest apertures, and they are unsurpassed for critical sharpness and definition. Extremely lightweight, they are ideal for portable equipment, and are easy to handle and interchange.

Kilar lenses have the added advantage of flexibility and economy. By means of simple screw-on adapters, one lens may be used on several movie cameras, 16mm and 35mm, and on 35mm still cameras. Adapters are available for standard 'C' mounts and for the Arriflex. Custom-built adapters and mounts are also available for others. Information and prices on request.

BASIC KILAR LENSES
(Complete with Lens Shade-Filter Holder):

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KILFITT Products are made in Western Germany

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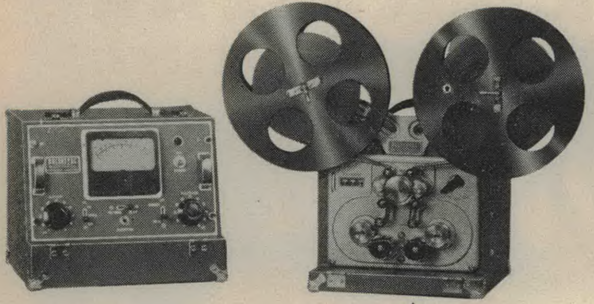
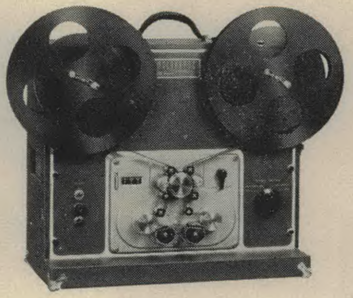
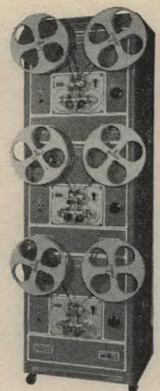
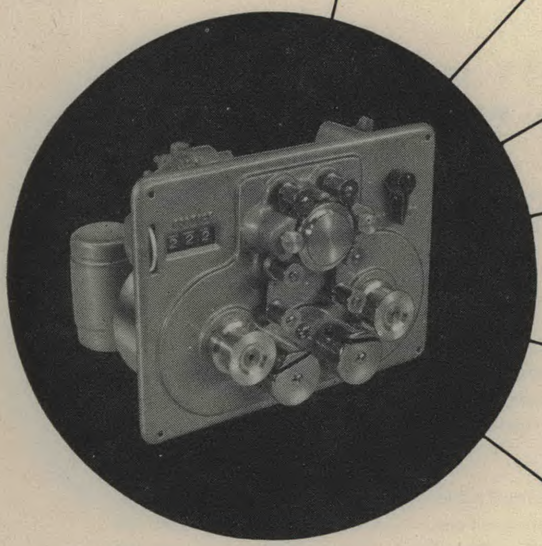


MODEL SW-602-RP
RACK-MOUNT RECORDER
IN PORTABLE CASE

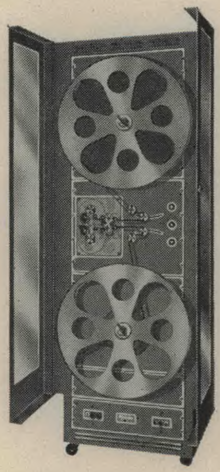


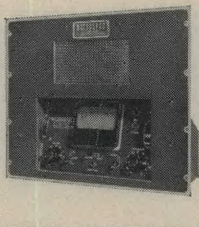
MODEL SW-602-D3
THREE INTERLOCKED DUMMIES
WITH PLAYBACK PRE-AMPLIFIERS





MODEL SW-335
35mm STEREOPHONIC
THEATRE
PLAYBACK SYSTEM





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EQUALIZED PLAYBACK PRE-AMPLIFIER

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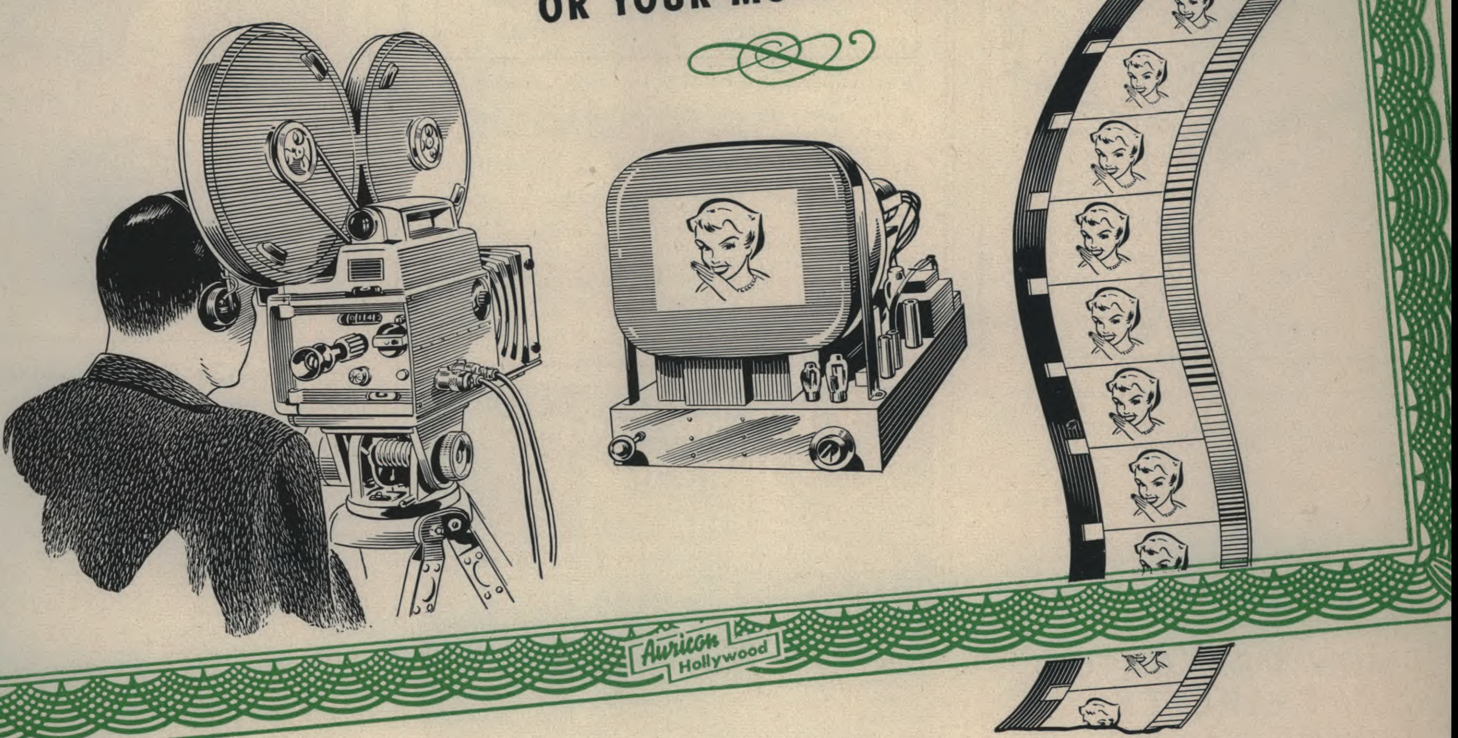

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...designed for Kinescope Recording...and shoots regular Live Action 16mm Sound-On-Film Talking-Pictures without any Camera modification or change in the "TV-T" Shutter! The Auricon "Super 1200" Camera can Kinescope Record a continuous 30 minute show using 1200 foot film magazines. The "TV-T" Recording Shutter (Patent applied for March, 1949) works equally well with negative-positive or reversal film. This Dual-Purpose "TV-T" Shutter is also available for the "Auricon-Pro" and "Cine-Voice" Cameras. Write today for information and prices.

Auricon Cameras with "TV-T" Shutter are sold...

① Without sound for "TV-T" Kinescope Recording of picture only.

② With Single-System Sound-On-Film for "TV-T" Kinescope Recording of picture and sound-track on same film at same time.

③ For Variable-Area OR Variable-Density Sound-On-Film "TV-T" Recording.

Auricon 50 ft. Kinescope "TV-T" Demonstration Films are available on loan to TV Station Managers and TV Film Producers. Please request on your letterhead.

USE AURICON "TV-T" KINESCOPES FOR:

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- ★ AIR CHECKS

Auricon 16 mm Sound-On-Film Cameras are sold with a 30-day money-back guarantee. You must be satisfied!

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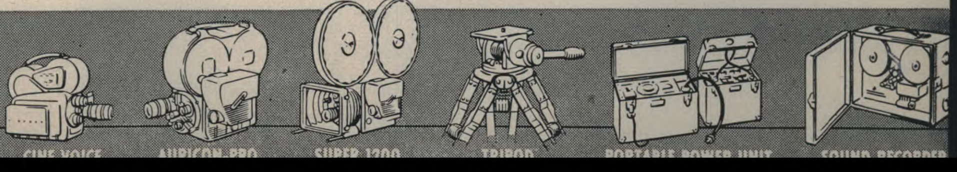
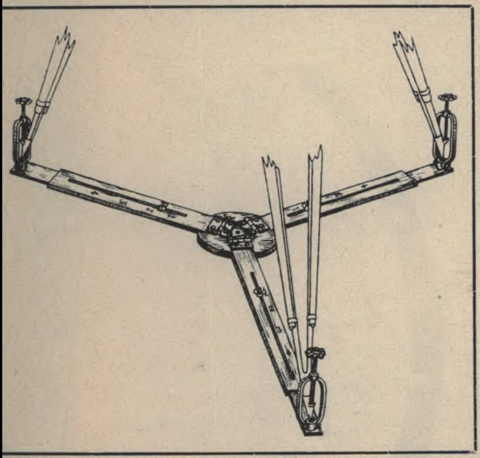


NEW AND USED EQUIPMENT
FOR MOTION PICTURE & TV FILM PRODUCTION

NEW F & B LEG-LOK TRIANGLE
WITH LEG-LOK CLAMPS AND REINFORCED CENTER CASTING



irst important improvement in triangles since ''Birth of Nation''.

eg-lok clamps grip tripod legs — no fear of points alling out of sockets, camera & triangle can be moved y 1 man now, can be used on roof of wagon or truck. dds stability, rigidity & safety.

ut-out center casting absorbs strain on leg hinges — revents loosening.

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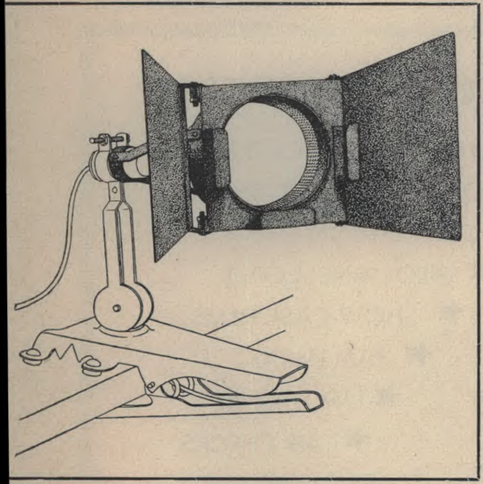
IMMEDIATE DELIVERY — $26.95

NEW F & B GATOR CLIPLITE
WITH BARN DOOR



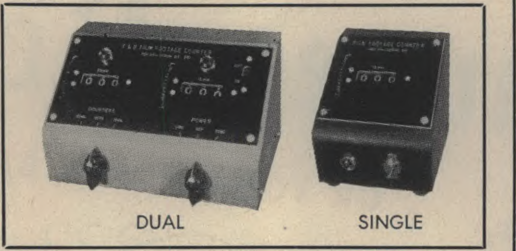
r locations, small interiors, hiding behind props and ndreds of other spots where ordinary lights can't go. angs from a nail — clamps securely to doors, chairs, ts or stands.

rn door swivels 360° — accepts diffusers, filters, etc.

eat with Colortran converters.

Price — complete —	**$12.95**
Less barn door —	**4.95**
Gator clips only —	**2.50**

F & B Film Footage Counter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- ★ All counters are resettable.
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35mm & 16mm

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AURICON SUPER 1200 SOUND CAMERA
AURICON PRO, CINEVOICE, FILMOS
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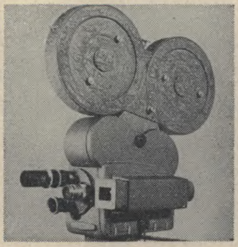
F & B 600-Ft. Magazine

for Aurican Cinevoice Camera



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AURICON SUPER 1200 NEW & USED	AVAILABLE

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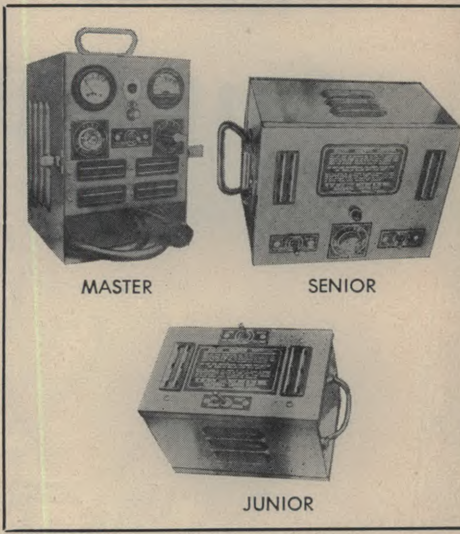
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High powered studio illumination from ordinary house current.

OPERATION: The Colortran is an electrical device which increases the efficiency of ordinary 110-115 volt bulbs by 180%. The PAR 38 150w. bulb, which is recommended here, will give MORE photographic light than a #4 photoflood or TWICE the light of a 500-750 w. spotlight.

CURRENT CONSUMPTION: A #4 photoflood requires 8.7 amperes, whereas a PAR 38 and Colortran needs only 2.5 amperes and gives more light than the photoflood. Three standard 1000w. bulbs will blow a 20 amp house fuse, but the Colortran and SEVEN PAR 38 150w. bulbs will not blow out a 20 amp. fuse. AMAZING BUT TRUE. . . . COLORTRANS DELIVER 3200° and 3450° KELVIN COLOR-CORRECT LIGHT.

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JUNIOR ''2000'' KIT — 2 - 3 lite units, Jr. Converter, 2 stands, carrying case	**$189.75**
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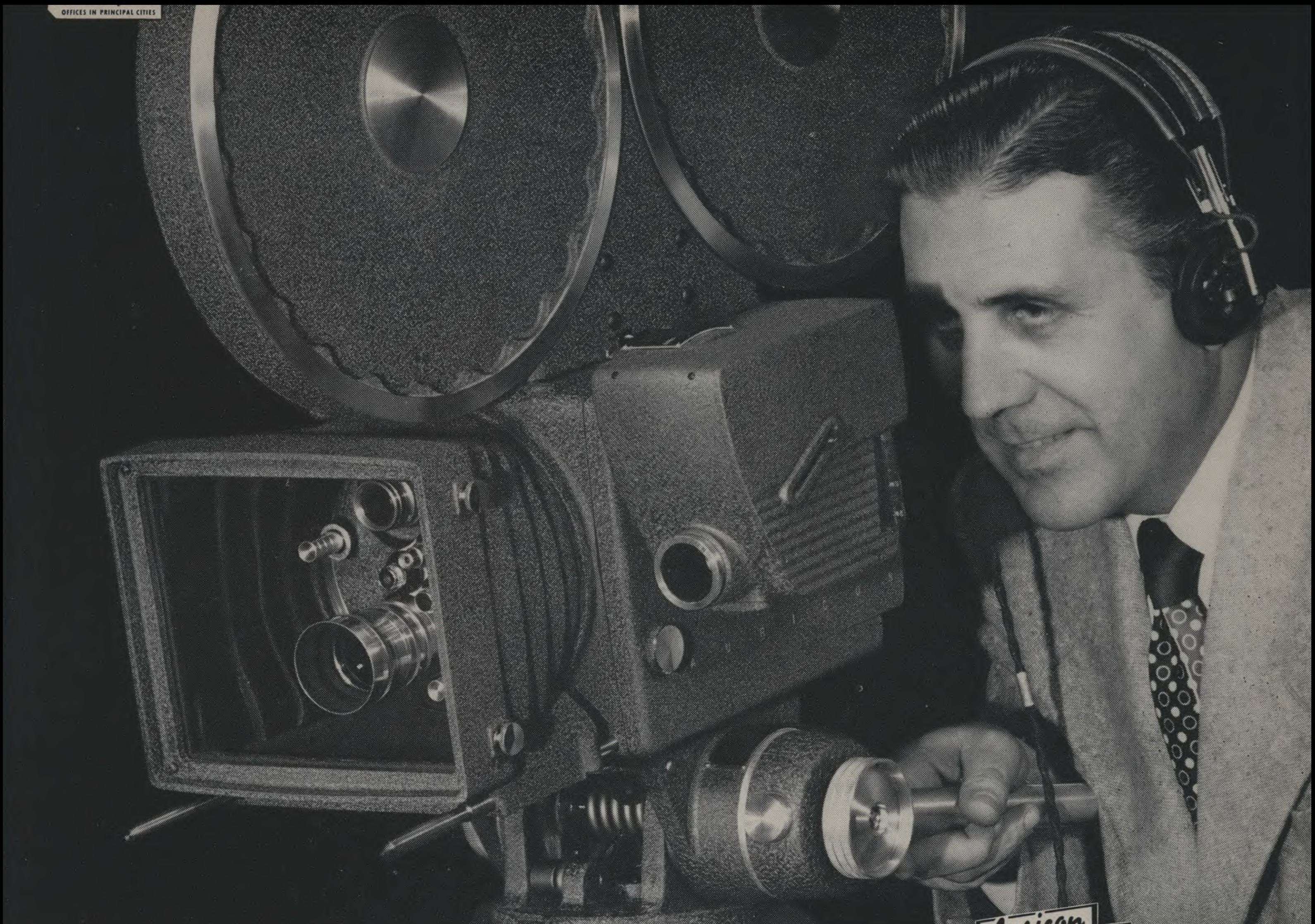

16MM SOUND-ON-FILM CAMERA

Auricon "Super 1200"

with new Model "CM-74A" features . . .

- ★ During picture exposure, your film runs through the New Auricon "Super 1200" Film-Gate with the light-sensitive film emulsion accurately positioned on jewel-hard Sapphire surfaces, an exclusive Berndt-Bach feature (U.S. Patent No. 2,506,765). This polished Sapphire Film-Gate is guaranteed frictionless and wear-proof for in-focus and scratch-free pictures, regardless of how much film you run through the camera!
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- ★ Two independent Finder systems (in addition to Reflex Ground-Glass Focussing through the Camera lens); a brilliant upright-image Studio Finder, plus a "Rifle-Scope" precision-matched Telephoto Finder.
- ★ Records "rock-steady" picture and High Fidelity Optical Sound-Track on same film at same time, with "whisper-quiet" Camera & Sound Mechanism synchronously driven by precision-machined Nylon gears.
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- ★ "Super 1200" is self-Blimped for completely quiet studio use.
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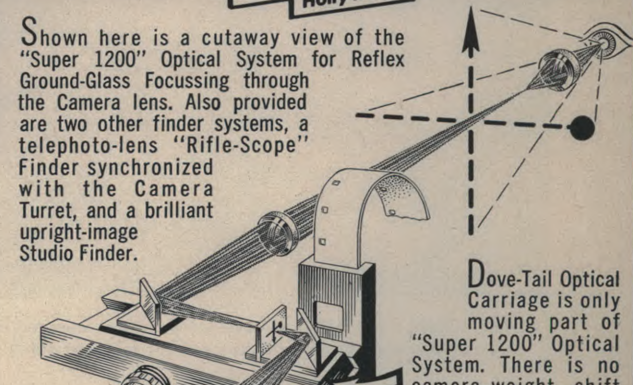
Auricon Hollywood



Shown here is a cutaway view of the "Super 1200" Optical System for Reflex Ground-Glass Focussing through the Camera lens. Also provided are two other finder systems, a telephoto-lens "Rifle-Scope" Finder synchronized with the Camera Turret, and a brilliant upright-image Studio Finder.

Dove-Tail Optical Carriage is only moving part of "Super 1200" Optical System. There is no camera-weight shift on tripod when moving from focus to film-shooting position.

"Super 1200" Camera casing, film gate and shooting lenses are solidly precision-mounted with relation to each other, and do not shift to focus or shoot.

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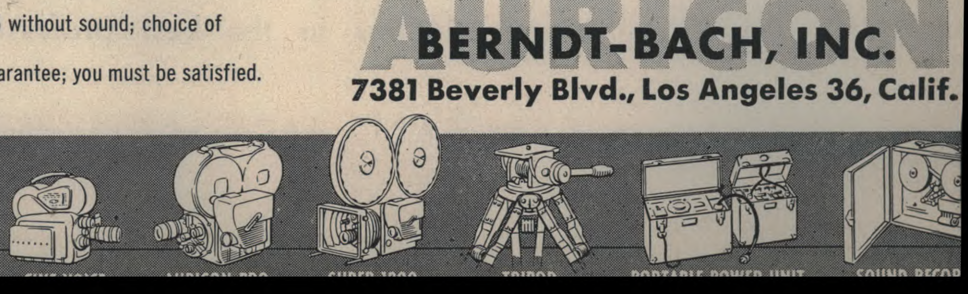


COPTER ARRIVES—Lying flat on his back, cameraman films the arrival of the helicopter that will take him to hospital.

SHOOTING FROM COPTER POD—Cameraman, sitting in the evacuation pod of the helicopter, films from air as machine takes off for hospital ship.

FOR SUBJECTIVE EFFECT—Most scenes were recorded as seen through the eyes of the player, with the camera set low and shooting in close.

BIG BLAST!—Cameraman Larsen and Lewis record a "close" hit, as seen through eyes of actor, as a light charge explosive is set off.

With A Script, A Plot And A Star...

How Navy-trained combat cameramen of the Pacific Fleet, using a minimum of equipment, turn out training and informational films in the best professional manner.

By CAPT. JACK LEWIS, U.S.M.C.R.

SMALL CREW—Shooting a scene for "I Am A Casualty" which the Navy's Pacific Fleet camera crew photographed in Korea.

KOREA IS ROUGHLY 8,000 miles from Hollywood. It seemed a lot further when the shooting was on.

A group of Navy-trained combat cameramen wearing steel helmets instead of berets and armed with a minimum of equipment proved, however, that with proper planning and careful but imaginative shooting, production work can be carried out right in the front lines and the product can be entertaining as well as informative film.

The Pacific Fleet's Combat Camera Unit made the initial landing at Inchon, filmed ships being blown up in Wonsan harbor and took part in the deadly withdrawal from the Chosen Reservoir in North Korea long before I became associated with it. Men from the unit worked with Admiral John Ford in obtaining footage for the Republic release, "This is Korea," and furnished additional footage for a dozen other films based upon the Korean War, including "Flat Top," "Battle Zone" and "Torpedo Alley." Background footage for "The Caine Mutiny" also was gleaned from the camera work of this crew.

It was when plans were being made to go into studio-type production "with a script, a plot and a star" that I was ordered from the 1st Marine Aircraft Wing to the camera unit as a writer. I had written horse operas for several Hollywood producers before being recalled to active duty, but I failed to see how this was going to benefit the Marine Corps. But Navy Lieutenant R. L. Tomlinson, who headed the Far Eastern unit at that time, had the answer to that.

"Write them like you would for Gene Autry," he instructed. "Try for twenty-seven minutes; use whatever stock we have on record; aim for quickie production, and keep them moving." The fact that I had never written for Autry didn't sway his decision.

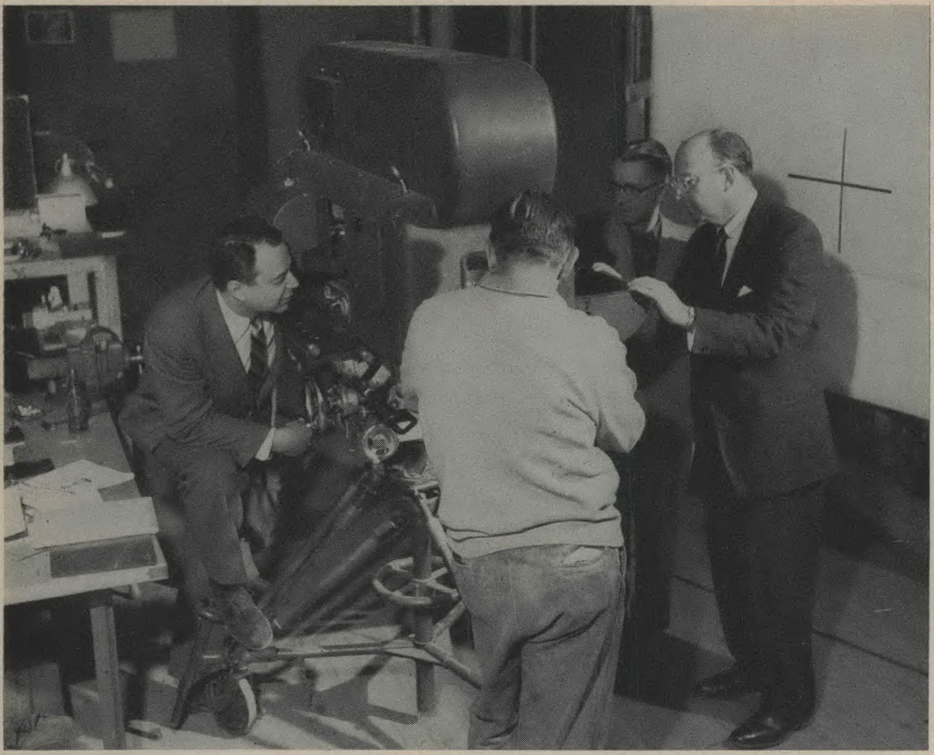
The first three scripts were turned out in as many weeks. The first, titled "Air Strike," dealt with a pilot who had completed his aerial missions and was sent to the front to act as a forward air controller—an officer who calls in air strikes—for the First Marine Division. The script was simply written and included as much stock as could be fitted in from the "color" that already had been shot by the unit in more than two years of war. The remainder was shot at headquarters of Marine Air Group 12 and in the actual lines of the Marine Division. All work was done in 35mm Ansco Color with a pair of Eyemos, one loaded with 100 foot rolls for use where bulky equipment might prove risky, the other rigged for 400-foot rolls.

In this first effort, the crew suffered its first casualty while shooting aboard the USS Bataan. Chief Richard B. "Moose" Hargreaves, USN, was directing his crew in obtaining required shots of Marine Corsairs making carrier landings, when an aerial rocket broke loose from an incoming aircraft. Skipping across the deck, the missile exploded and a piece of shrapnel tore into the chief's shoulder. A quick thinking officer was credited with saving Moose's life by halting the blood flow until a surgeon could reach the scene.

Star of this opus was Major William D. Smart, a pilot who only two weeks before had been shot down behind enemy lines and captured by two Red soldiers. He was held for an hour before effecting an escape and being picked up by a helicopter.

(Continued on Page 556)

AIR STRIKE—First "production-type" film to be made through joint efforts of Navy Combat Camera Group and First Marine Air Wing's Public Information Section dealt with work of men assigned to direct planes in close air support strikes against enemy.



THE MEN responsible for Natural Vision and the camera that started Hollywood producing 3-D films. At left is Milton Gunzberg, president of Natural Vision Corp. Right foreground is Dr. Julian Gunzberg, vice-president of the company, and (to his right) O. S. "Buddy" Bryhn who built the first Natural Vision camera mount.

The Story of Natural Vision

A desire to film a story about "hot rods" led to the development of Hollywood's first practical 3-D camera and filming system, started the trend to 3-D movies.

By DR. JULIAN GUNZBERG, M. D.

NATURAL VISION is a stereoscopic motion picture system born in 1950 from the efforts of a motion picture writer to find the media that would adequately tell the story that he had just written. The writer was my brother, Milton L. Gunzburg, and the story he had written and wanted to produce was called "Sweet Chariot." It was a sympathetic story about a modern boy and his car. It was the story of boys working on automobiles, experimenting with motors and body designs, of driving these automobiles in competition, and of the organizations that make these competitions safe. The story in itself would make an exciting motion picture, but realism in photography of these beautiful cars and their engines was essential, and the search for this realism led us to stereoscopic photography.

It started with test shots of the cars and their motors taken in normal 2-D with a standard professional 35mm Mitchell camera. With my brother, I saw these test scenes, and the photography fell short of realism. I could sense how disappointed he was, for without vivid photography of the engines and the automotive parts, the story would lose much of its value.

Here, I may mention briefly where I come into this story. I am an ophthalmologist, that is, an M.D. especially trained in eye surgery. I also have been for years a serious amateur still photographer, and one of the latest cameras of which I became enamored was a still 35mm stereo camera. I suggested to Milton that we might photograph some of the cars and their engines with this camera, and this we proceeded to do. The results were startling. The pictures were beautiful and the motors stood out in vivid relief. They were so real, you felt that you could touch them.

With characteristic zeal and drive, Milton began his investigation of the possibility of making a feature-length picture in stereoscopic photography. The initial investigations were not too encouraging. True stereo motion pictures had been made, but they were short subjects only, novelties in character, and could not be relied upon to give data on whether a feature length stereo picture would be practical.

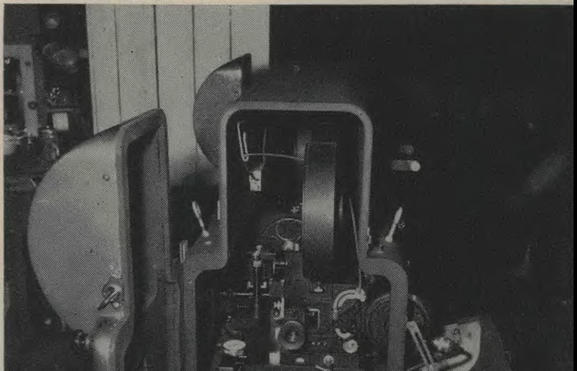
As my brother's investigation progressed, he asked himself these questions:

"Would stereo add greatly to the cost of making a motion picture?"

"Could stereo be added to present-day motion picture techniques, from the taking to the editing, without basically changing these methods?"

"Could stereo be made consistent throughout a picture without distortions in perspective or size?"

"Could a stereo picture be visually comfortable for the average or majority of viewers?" As an eye physician, I was vitally interested in this problem: "Would the audience wear glasses?" At the present time, the only practical system for stereo movies is the Polaroid



END VIEW of the Natural Vision 3-D motion picture camera in blimp. Unit consists of two Standard Mitchell 35mm NC cameras mounted opposed, with lenses picking up image from angular mirrors.

system which requires the viewer to wear special viewing glasses.

To answer these, and a multitude of other questions, a thorough study into stereo picture photography was launched—past methods were reviewed and analyzed, motion picture technical people were consulted. My background in photography and my knowledge of eye physiology and optics were to prove valuable.

Up to the time Milton began his work, the accepted motion picture stereo methods were largely adapted from the still stereo techniques. These were evolved from the stereo drawings of Wheatstone and Brewster in the 1850's and 1860's, and from the stereo pictures which reached their heights around 1900. Basically these pictures were taken with two cameras shooting straight ahead. The optical axes of the two cameras were parallel to each other, and to control the stereo perspective and the separation, mathematical formulae were worked out in the interaxial spacing of these two cameras.

Simply stated, the cameras were placed closer together for closeup shots, and wider apart for distance shots. For viewing these pictures in the stereoscope, this system worked beautifully. Quite naturally then, the early 3-D pioneers, in adapting these "still" stereo picture techniques to the motion picture, chose to carry over the concept of the variable interaxial, with, of course, certain modifications. These modifications were due to change in viewing systems. In the stereoscope, the separation of the two eye images was comparatively simple. Each eye saw its separate picture, and these pictures were easily adjustable to the eye differences of the different viewers. In motion picture projection, the right eye and left eye pictures had to be separated by filters—at first with colors (as the red-green) and later by polarization. This in turn required the viewer to wear special glasses so that each eye saw the picture intended for it and rejected the picture for the opposite eye. This meant that camera matching and line-up had to be far more accurate, and more so because of magnification; and projection had to be meticulous, for the viewer could not control the line-up.

In adapting "still" stereo methods to motion pictures, the early 3-D pioneers had once again to work out mathematical formulae, adding the factors of the distance of the viewer from the screen, the size of the screen, the magnification of the picture. Then, of course, adding the taking factors—the focal length of the lenses, the distance of the camera from the scene, etc.

These variables were worked out in mathematical terms of stereo perspective and separation, and the correct distance between the two cameras was determined.

Later the concept of the stereo window was developed. Simply, this stated that the projection screen was as a window; if one camera was "toed in," the foreground separations would be in front of the window and hence produce the stereo effect of foreground relief; and the background separations in back of the window, and hence produce the effect of background relief. These separations were therefore less the closer to the screen window, and further apart when away from the window. The stereo effect desired could therefore be calculated, and these variable factors were again added to the other variables in determining the interaxial distances.

With this interaxial system, each scene had to be calculated mathematically, and the camera set-ups could not be readilly changed during the filming of the scene. Although we appreciated the ingenious developments of earlier workers in evolving this interaxial system for controlling the many factors involved, we could not conceive that this system could be applied to the making of a feature-length motion picture without basically changing established motion picture methods in writing, production, scene design, photography and editing.

These were some of the reasons why we felt the previous variable interaxial system would not work:

(1) Camera engineers with long experience in the industry convinced us that in order to maintain the tolerances necessary to the matching of the two images, the cameras and their optical axes, as well as the film planes themselves, would have to be in absolute alignment to each other. If the cameras were to be moved in relation to each

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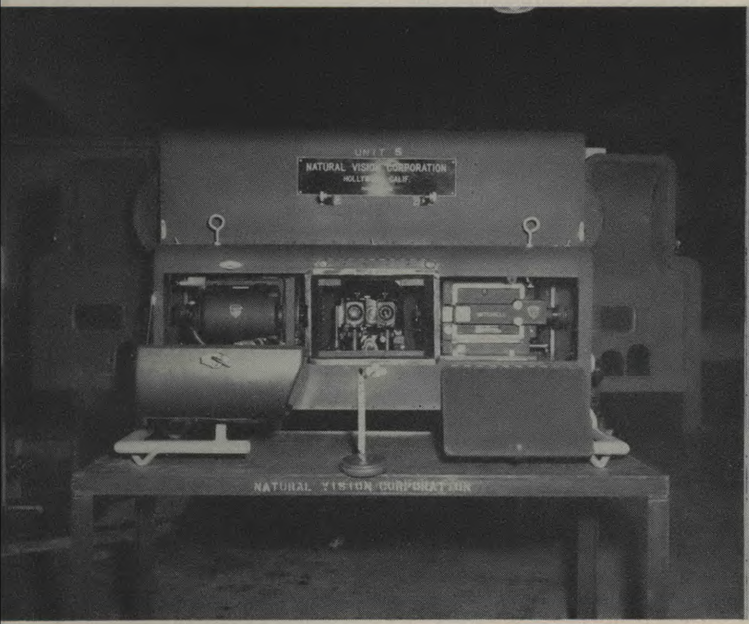
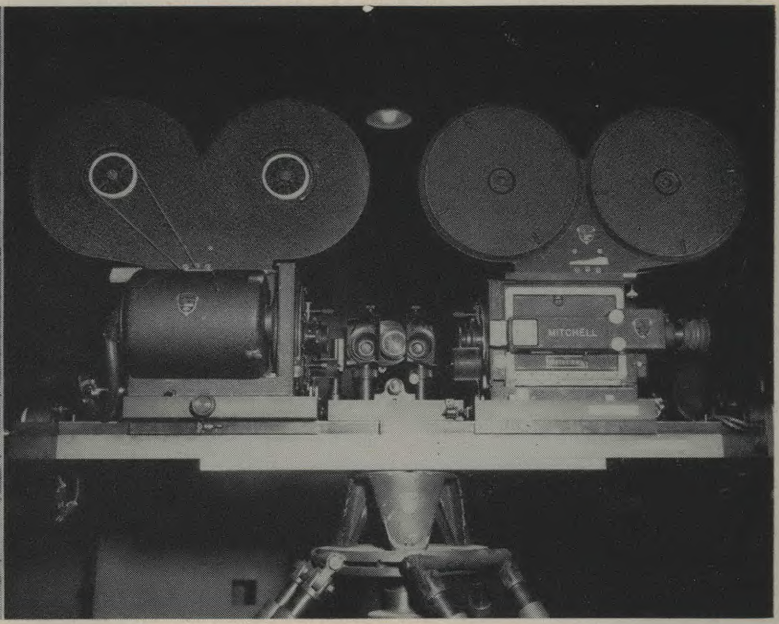


FRONT VIEW of blimped Natural Vision 3-D camera. Right and left doors afford access to motor and to camera mechanism for threading film. Camera operates on tripod, dolly or crane. Besides center viewfinder, there is a finder on each camera for lining up scene for 3-D.



VIEW of Natural Vision 3-D camera with blimp removed. Here may be seen the two divergent mirrors in center and the front element of the central viewfinder set between them. Camera features a fixed interaxial and variable parallax control.

SHOOTING SCENES that later were incorporated in opening sequences of "Man With A Thousand Hands" in the New York studios of Movietone News are Jerry Hirschfeld, cameraman and Anthony Brooke, assistant. In front of camera is actor Raymond Massey, who narrated picture.

'Man With A Thousand Hands'

How A Canadian motion picture company filmed the epic story of British Columbia's biggest construction project for International Harvester.

WHEN THE CANADIAN coastal steamer "Princess Norah" tied up at her berth in Kemano, British Columbia last August, she discharged an unusual assortment of cargo and passengers at the tiny frontier camp. Unloaded under the supervision of a group of men from Associated Screen News, Ltd., Canadian film producing company, was a miscellany of motion picture gear—cameras, tripods, lighting equipment, cables, slate boards—and the hundred-and-one items necessary to the production of a motion picture.

The arrival of Associated's movie crew at Kemano was a natural sequel to a preliminary survey trip which had been undertaken earlier to the giant Kitimat project of the Aluminum Company of Canada, Limited. Here a pictorial record was to be photographed which would show the part played by International Harvester heavy duty equipment in bringing the Kitimat project to fruition. International Harvester Company's role was to furnish hundreds of crawler tractors, power units and motor trucks to the various contracting companies engaged in the project. The picture was to be filmed in the primitive tangle of ocean inlets and mountain peaks that is Canada's Pacific Coast; where civilization's only toe-hold until now was an occasional cluster of logger's cabins and cannery settlements hugging the shorlines.

Besides International Harvester representatives, the pre-filming survey party included Charles A. "Cap" Palmer, an executive producer with Metro-Goldwyn-Mayer studios in Hollywood, and Jack McDougall, Associated Screen News film director.

Now, following a second survey trip which culminated in preparation of the shooting script, the ASN company was ready to start filming. Producer Palmer had visualized a script that was to be entirely new in concept, that was to avoid the beaten track taken in so many earlier sponsored films on a similar theme. The picture had to be concerned with more than just this one construction job, tremendous as it was. It had to be concerned with more than aluminum, important though that strategic material might be. The goal of this production, then, was to capture the epic quality of Universal importance.

Years, earlier, the Kitimat project, or any others like it, would have been impossible to undertake. It would have been impossible to crowd enough men into the space available to pierce the mountains of solid rock, to move the millions of tons of earth, and to bridge the innumerable chasms and gorges. But now the new tools created by man had given him a new mastery over Nature, opening up new horizons and opportunities, and giving him the weapons with which to buck into such stupendous challenges—with, of course, untold benefits to everyone the world over.

The obvious theme that would give "epic" quality to the proposed picture was *tools* built on the parallel angles of bigness and fantastic challenge, and the tools that give man the power to overcome the challenge. The main theme was to be backed with certain other 'plus' angles—scenic values, fresh and exciting action, geological and geographical values, plus human and character interest.

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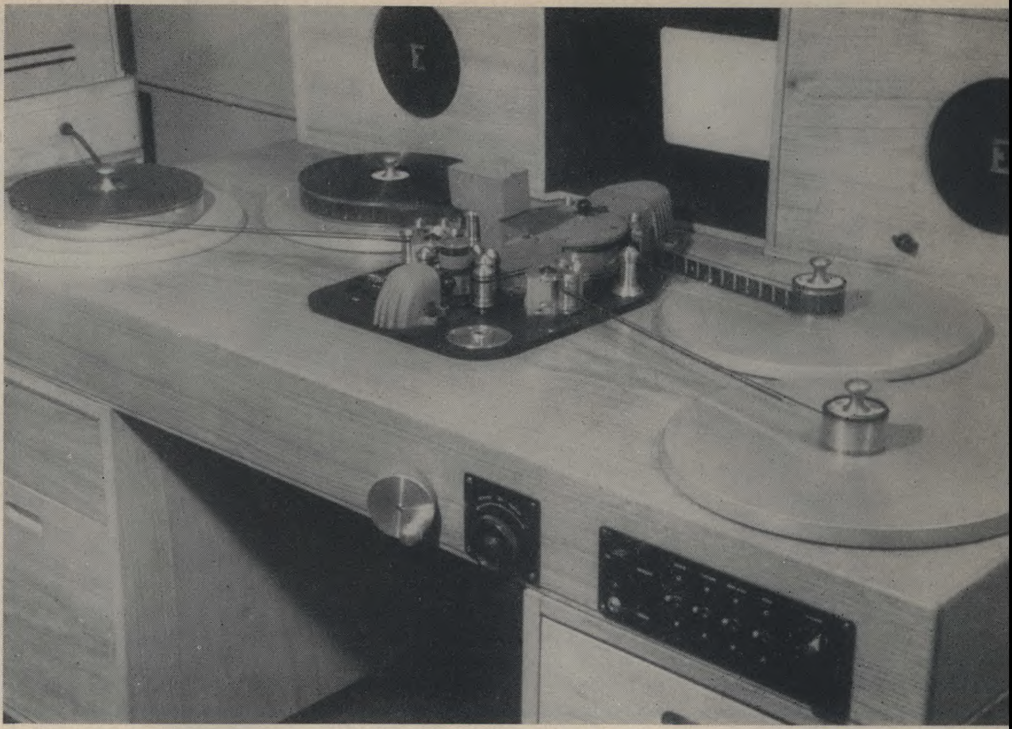

Fig. 1—The Precision Film Editor, with 7" x 9" viewing screen.

Precision Film Editor

A recently developed preview-and-editing machine which utilizes a continuous projection process in place of the customary intermittent movement.

By TORBIN JOHNKE
Editor Precision Equipment Corp., New York

ONE IMPORTANT WAY to reduce costs of production is to minimize time lost in previewing and editing. To attain utmost economy in those two processes three requirements must be fulfilled.

First, the equipment used must be of such nature that valuable originals and masters can be entrusted to it without risk of damage. Otherwise editing and previewing must be deferred until after duplicates have been made. If production must be suspended pending previewing, the time thus lost can be of significant importance.

Second, the equipment used should be sufficiently versatile in design and details to meet all normal demands of studio and telecasting procedures without any delay for modification of facilities or special setups of any kind.

Third, the equipment should permit several persons to see the picture and hear the sound simultaneously. And if the picture is bright enough for several persons to see it clearly under ordinary room lighting that is a further advantage.

The Precision Film Editor is a device engineered in every detail to meet the above requirements completely and with generous tolerances. It is versatile and flexible in operation to a degree that is unprecedented in operation; if used with only ordinary care, even by unskilled personnel, it can be trusted absolutely not to damage film. It presents a 7 × 9 in. screen image bright enough to be seen clearly under ordinary room illumination and a loudspeaker output of 4-w.

Figure 2 is a general view of the machine. At top, rear, is the screen, flanked on one side by the loudspeaker grille and on the other side by a dummy grille included for symmetry of appearance, behind which is located the amplifier.

The projector mechanism and soundhead are grouped on the panel in the center of the table, with the projector nearer the screen and the soundhead at

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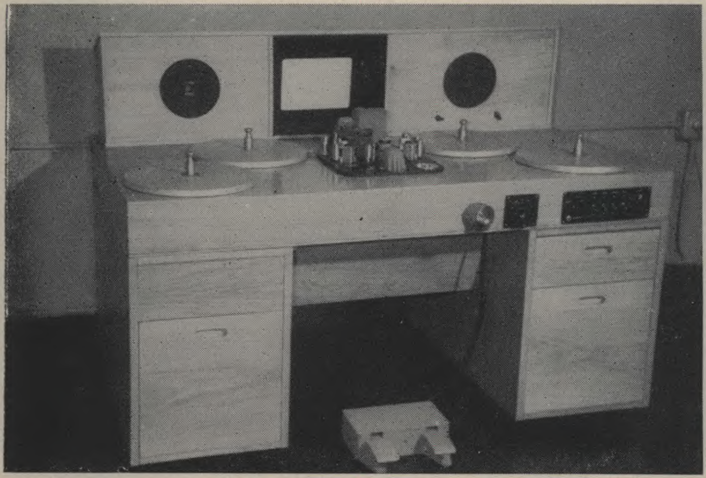


Fig. 2—Foot pedals control forward and reverse motion of films.

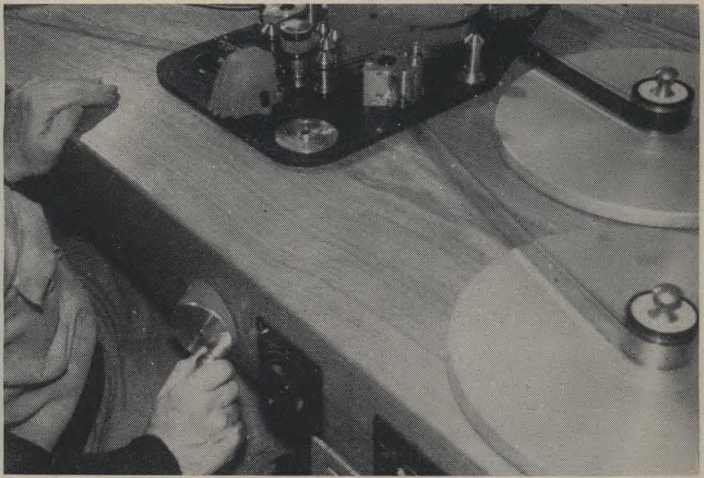


Fig. 3—Closeup view of controls and film threading pattern

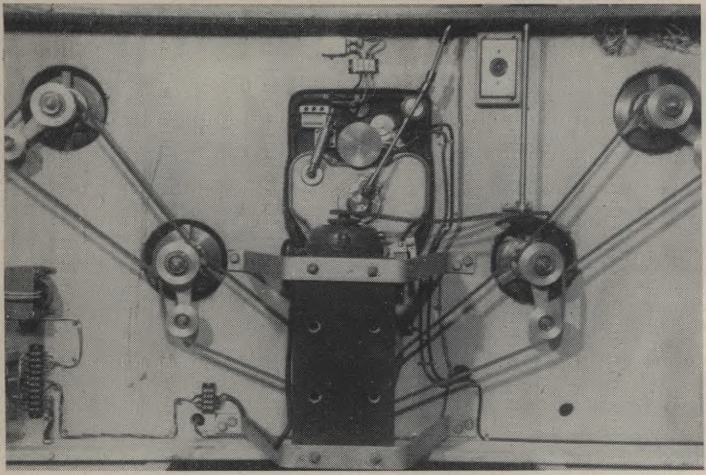


Fig. 4—Under-the chassis view, showing drive system.

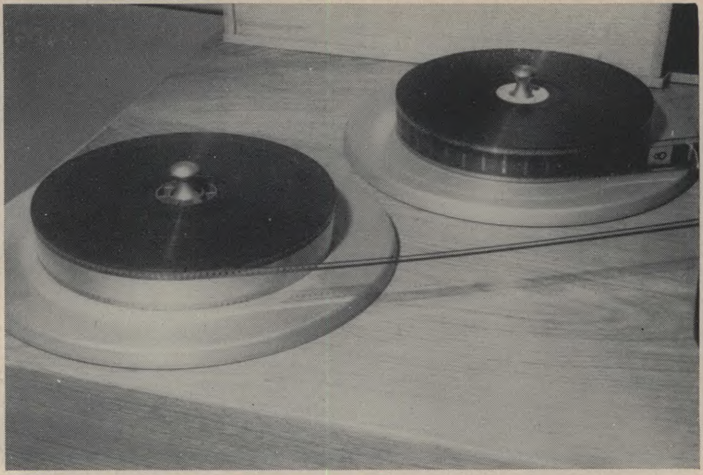


Fig. 5—Rolls or reels of film lie flat

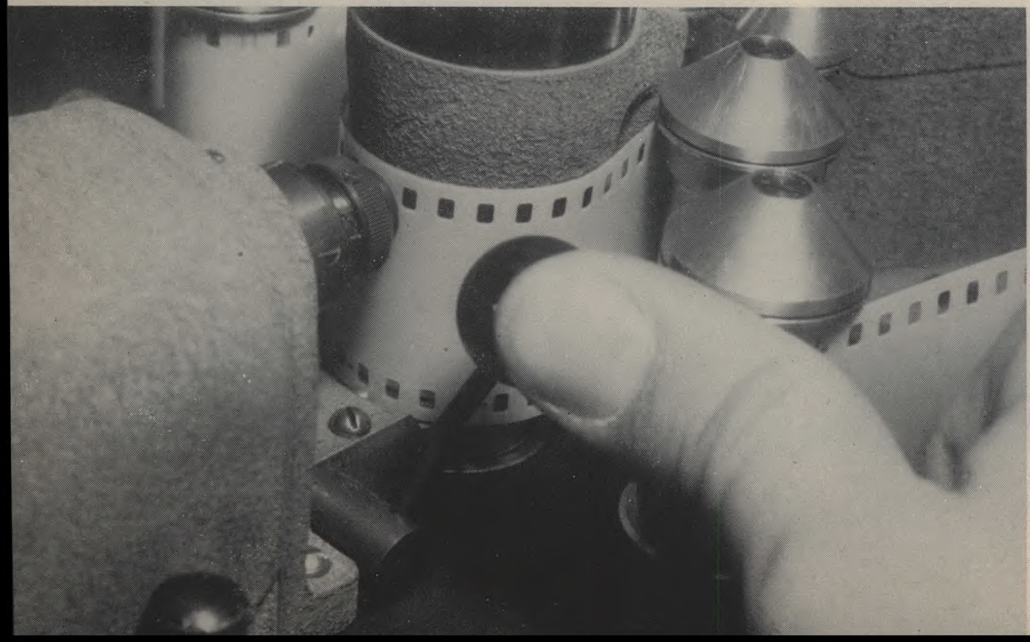
the rear, nearer the operator's position. The two turntables at left are intended for picture and sound reels, respectively, the one nearer the screen carrying the picture film and the one nearer the operator, the sound film. The corresponding take-up turntables are at the right. However, right and left can be reversed, since motor direction can be reversed with ease.

The controls are seen, conveniently located for the right hand, on the front of the desk. The chromium control at left is for adjusting synchronism between picture and sound. The sound reel always runs at constant speed—although that speed may be varied; the chromuium control is used to adjust the speed of the picture reel faster or slower with reference to the sound reel, until synchronism is attained. A frame counter shows exactly how many frames displacement are needed to achieve synchronism. At the right of the synchronization control wheel is the speed control knob. This alters the speed of both sound and picture reels simultaneously between limits of 2 and 56 frames per second. To the right of the speed control is a row of switches for the amplifier, motor, etc., and a volume control. The foot pedals can be used instead of the hand control, if preferred, to set the equipment into operation. Pressure on the right pedal drives the films forward; pressure on the left pedal automatically disengages the forward drive and throws in reverse drive.

Figure 1 shows the panel controls in greater detail, and also shows the editing machine with separate picture film and sound film threaded, in one of the three ways of threading.

There are two other ways of threading. When previewing or editing combined picture and sound prints, the picture film is threaded through the aperture and then run directly to the soundhead without loops. Since the projection process is continuous and an intermittent movement does not exist in this mechanism, no loops are needed; and if the film is threaded taut the displacement between picture and sound apertures is always exactly 19½ frames. When separate picture and sound prints are used, and the purpose is to edit dialogue or perform any other function for which sound flutter is not important, the sound film can be threaded through one sprocket only instead of two for faster, easier operation.

FIG. 6—Film marker at the sound aperture. Pressing lever punches small chip from film which drops into receptacle beneath equipment.



There are two general methods of editing. In one, the editor uses the surface of the editing machine as a rewind bench, and cuts and splices the film as he proceeds. In the other, the editor makes notes which are passed on to another person who subsequently does the cutting and splicing. These notes may include information on the number of frames displacement needed for synchronism. They may also include references to the film markings made by the editor, for this machine has two film markers, one at the picture aperture and the other at the sound aperture. Figure 6 shows the latter in use. A small chip is nicked out of the film. These chips drop into containers provided for them, which must be emptied occasionally; loose chips might conceivably get into the drive and scratch film, hence these special containers which make any such occurence impossible are provided.

The drawers at the right and left side of the machine provide reasonable storage space for film, reels, splicing materials, note pads and other facilities for efficient operation.

Figure 4 shows some of the mechanical details of the drive. The motor is wound for 220-v, 3-phase a-c, and has a built-in stepless gear for continuous variation of driving speed. In Fig. 4 you are looking at the machine as it would appear if laid over on its back; the underside of it faces the reader and the control panel is at the top. The chromium synchronization-control wheel is just visible at the top, toward the

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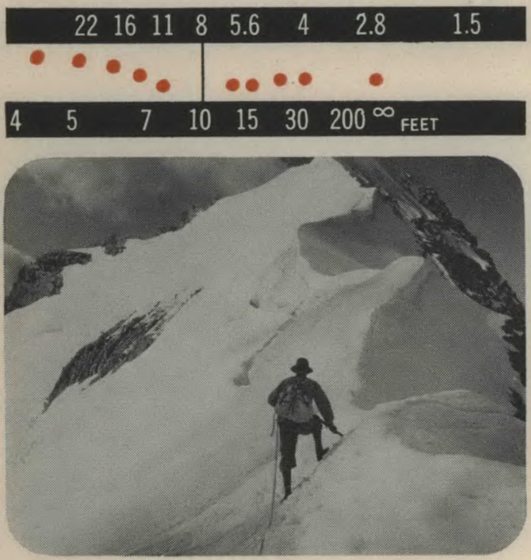
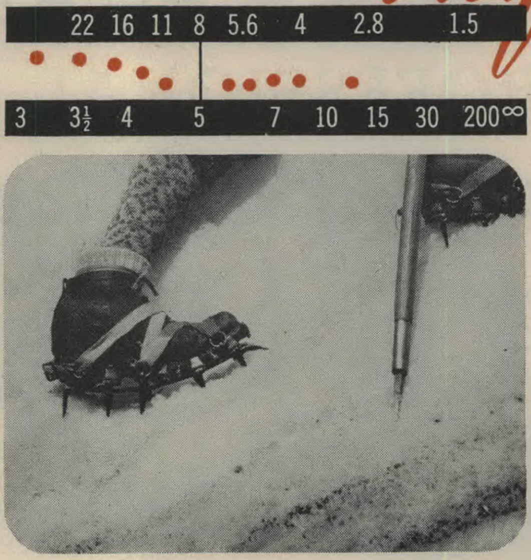
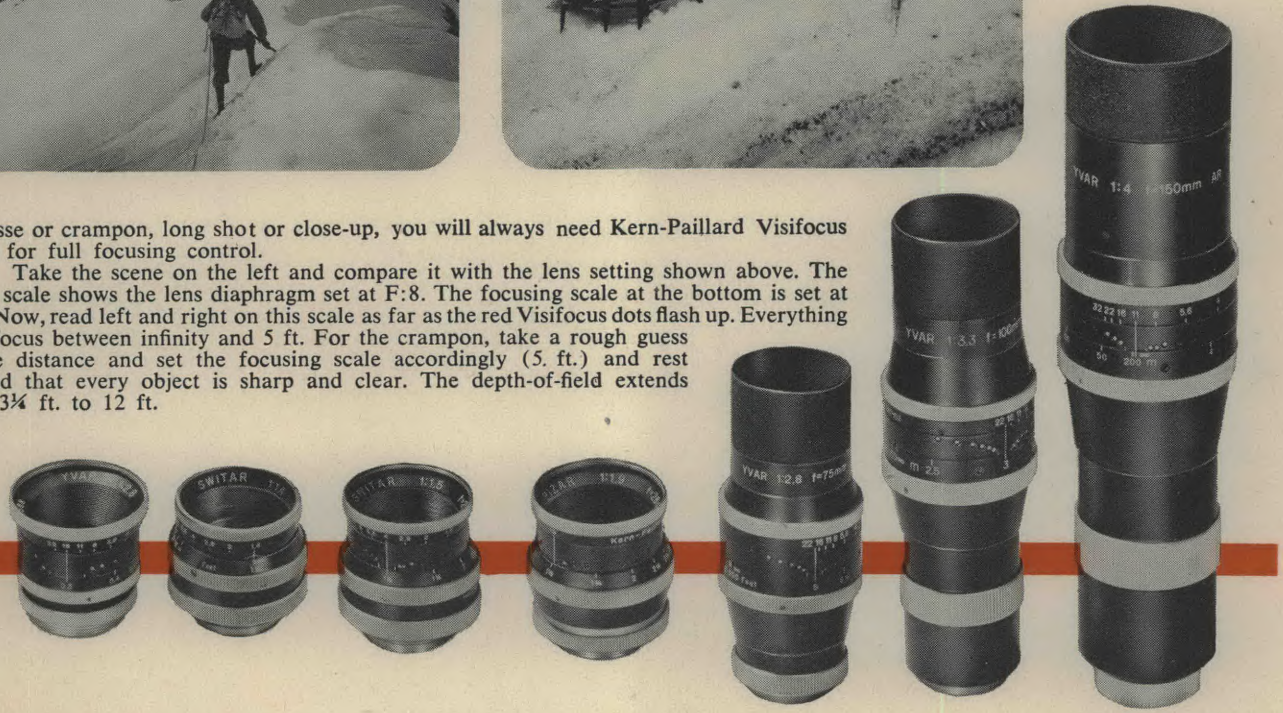




Crevasse or crampon, long shot or close-up, you will always need Kern-Paillard Visifocus lenses for full focusing control.

Take the scene on the left and compare it with the lens setting shown above. The upper scale shows the lens diaphragm set at F:8. The focusing scale at the bottom is set at 10 ft. Now, read left and right on this scale as far as the red Visifocus dots flash up. Everything is in focus between infinity and 5 ft. For the crampon, take a rough guess of the distance and set the focusing scale accordingly (5. ft.) and rest assured that every object is sharp and clear. The depth-of-field extends from 3¼ ft. to 12 ft.



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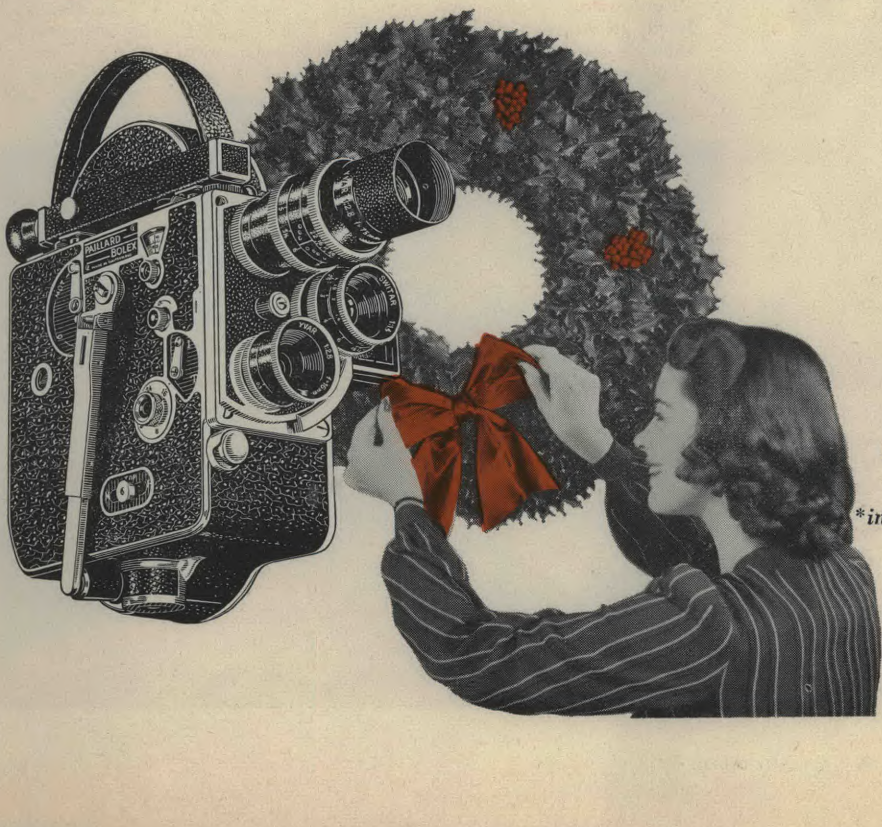

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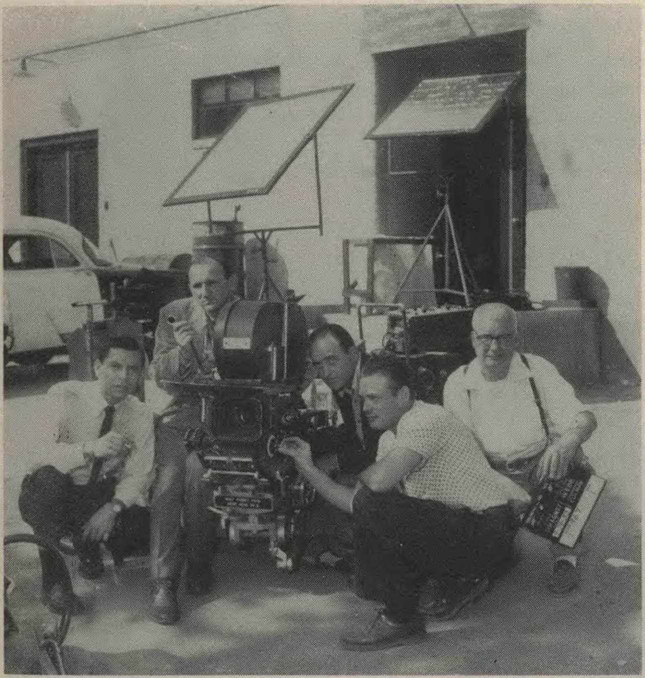
WHO'S WHO IN TV CINEMATOGRAPHY

Harold Stine, ASC, who directs the photography of the "Superman" TV film series was presented with chair by members of cast and crew when Stine celebrated his birthday last month. Chair frame bears autographs and comments of well-wishers. Stine (center) accepted gift from assistant cameraman Robert Hauser (left) and operator Harry Underwood.

George Diskant, ASC, (left) who directs the photography of the "Singer Four Star Playhouse" TV film series, lines up a shot as star Dick Powell (foreground) looks on approvingly. Powell, along with Charles Boyer and David Niven star in the dramatic series of films, which are televised over CBS-TV.



Edward Colman, ASC, (2nd from left) director of photography of the "Dragnet" TV film series, awaits approval of a camera setup by Jack Webb (left) star and director of the dramatic series, rated one of the best TV programs in the national polls. "Dragnet" films are photographed at Walt Disney Studios in Burbank. At right are members of the camera crew.

"Look, Phil—I like this angle better," says radio-TV comedian Jack Benny to director of photography Phil Tannura, ASC, who photographed Benny's initial four TV films, soon to be seen over CBS-TV. Tannura, who regularly photographs the "Burns and Allen" television show on film, appears to doubt wisdom of Benny, seen here observing scene through finder of Tannura's Mitchell camera.

Production Planning

The pre-production planning methods employed by major studios can benefit the amateur and semi-professional movie maker, too.

By CHARLES LORING

A FILM MAKER OFTEN spends a great deal of time and effort turning out a good script only to nullify the effect in actual shooting by ignoring one important step in preparation: the process known as *production planning.*

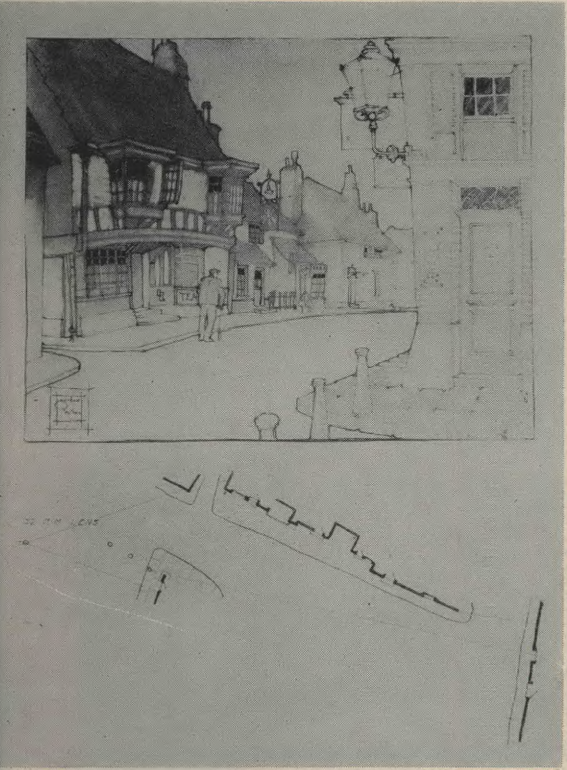
It is rarely, if ever, that a good film "just happens." Almost always, a picture worth seeing on the screen is the result of a good deal of hard work, most of which must be done before a camera starts grinding. In order to best accomplish this preliminary preparation for shooting, the film-maker should constantly visualize the production in its overall form—not merely as a collection of fragmentary scenes that can be shot haphazardly and spliced together.

THE STORY BOARD is an effective means of visualizing a script in the production planning stage. Each scene is sketched roughly and arranged in sequence. Photo courtesy Raphael G. Wolff Studios, Hollywood, Calif.

Actually, production planning in one form or another is as essential to the home movie as it is to a feature or commercial sound film. Naturally, the more involved the story, the more thorough the phase of planning must be.

Careful preparation will give the resultant film a general smoothness plus a unified approach so that, on the screen, it will seem to have been designed and executed by one creative mind, even though many technicians may actually have had a part in the filming.

In addition to this individual "touch," pre-planning assures consistent continuity and a minimum of wasted expense, effort, and time. This latter item is no small consideration, for time on the sets is important. It should not be wasted by making a full cast and crew wait around while issues are decided that should have been settled on paper long before the picture reached the shooting stage. At best, certain unforeseen delays are inevitable—but a good deal of expensive time-waste can be avoided by intelligent pre-planning.



SCENE VISUALIZATION for a major studio production. Here a proposed set has been sketched and planned to conform with the angle taken in by a 32mm lens.

The producer of the film should become thoroughly familiar with his script before shooting begins. He should know every scene and sequence, its content and requirements. He should know just how each bit of action is to be staged, plus the effect it is calculated to have on the audience. He should literally *live* with that script before he starts to shoot. With this approach he will be able to produce the film for the most observant members of his potential audience, and thus gain the best possible reaction.

The first step in production planning is to call together for a preliminary conference all of the technicians who are to participate in the shooting. The purpose of this conference is to set up certain basic standards of operation, to familiarize everyone with the approach and technical requirements of the script, and to anticipate any problems that might arise later on.

This conference should be an informal sort of affair with the producer or

(Continued on Page 550)

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EXTENSION TUBES permit ultra-closeup photography of small objects so that they appear highly magnified on the screen—such as the ants in this scene from a 16mm educational film.

TELEPHOTO LENSES can be used to bring closer, objects in a distant field, such as the two wary baby foxes pictured above, with comparable magnification on the screen.

Extension Tubes In Cine Photography

Coupling your camera lens with an extension tube alters the lens' characteristics. Here's how to calculate proper exposure when using extensions.

By JOHN FORBES

EXTENSION TUBES are an important part of the lens equipment of every serious amateur cine photographer, particularly those undertaking the photography of small objects highly magnified. The function of extension tubes, which are used in conjunction with the regular camera lens, is not always fully understood. In fact one filmer recently asked the writer if, by using a half-inch extension tube with a 1-inch lens on his 8mm camera, he could obtain the same picture results as with a 1½-inch telephoto lens, and also, if use of the tube would reduce the original f value of his lens.

Here it should be stated that an extension tube coupled with a camera lens does not make it a telephoto. The functions of telephoto lenses and extension-tube-coupled lenses are different. Extension tubes permit closeup photography of small objects so that they appear highly magnified on the screen. A telephoto lens on the other hand brings closer, objects in a distant field.

Getting back to the filmer's question above, let us first consider the original camera lens he planned to use—the one-inch for an 8mm camera. Why this lens in place of the half-inch lens which is standard for the 8mm camera? Because, said the filmer, the original lens did not give the magnification desired. But adding a half-inch extension tube to the one-inch lens would not convert it to a telephoto, according to the common conception of a telephoto lens. Such a combination would throw the lens out of focus because the distance from lens to film would be increased beyond the focal length of the lens. The f value of the original lens would be destroyed at once. The original f calibrations would no longer be valid be-

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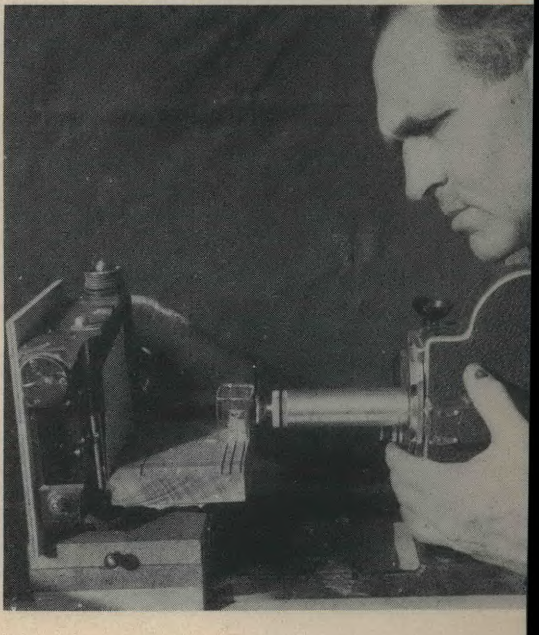
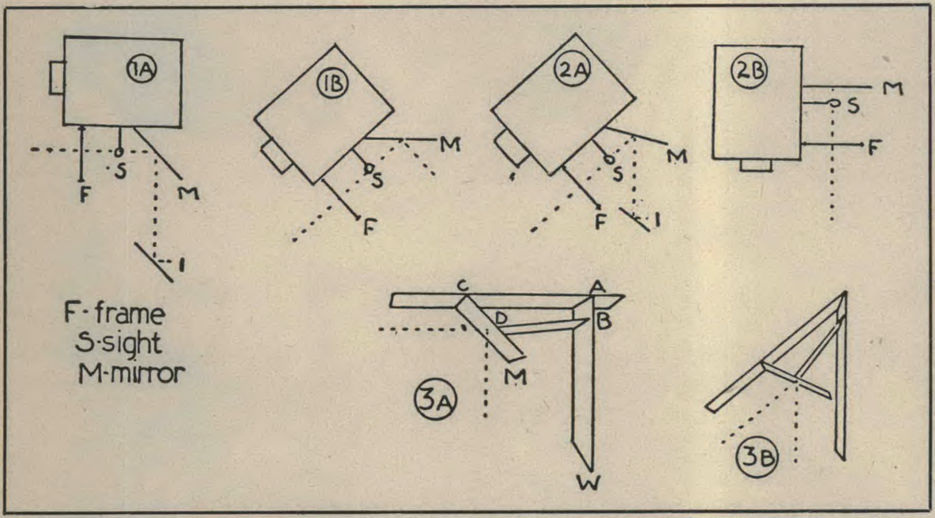


HIGHLY INTERESTING subjects can be filmed and brought to the screen in giant dimensions when filmed with either an 8mm or 16mm camera, using extension tubes in conjunction with the regular camera lens. Here a filmer is photographing a group of ants, using a 4-inch extension tube with a 1-inch lens mounted on a 16mm Bolex camera.



FIGS. 1 to 3 show principle of gadget and its use on a cine camera hand-held above heads of spectators. Camera is focused on scene by sighting through mirror M, which changes angle to keep scene in view as tilt of camera is altered.

Gadget For Shooting Over The Heads Of The Crowd

Simple camera attachment enables cine amateurs to shoot parades, sports events, etc., from sidelines without interference from spectators.

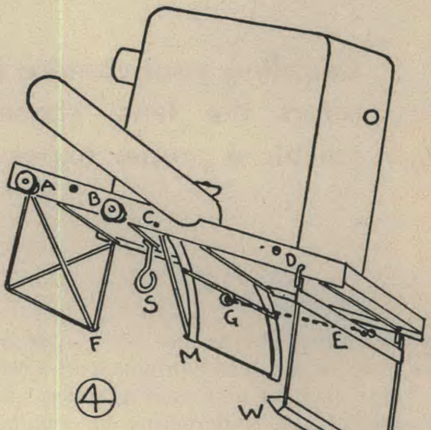
By HARRY WALDEN

YOU'RE JAMMED IN A CROWD, with not a hope of seeing over the heads of the tightly packed folk in front of you. Gentlemen, this is where you use my mouse trap viewfinder! It's a mousetrap because, when closed, it bears too close a resemblance to a "backbreak" to please the chromium and real leather addict. And it's not a periscope proper, though similar in principle; but at least it has the advantage that it can be folded up quite small.

When I thought over the problem of seeing over the heads of the people in front, it seemed to me that there were two alternatives. The first was to let myself go on a really elaborate affair, a sort of pan and tilt head on top of a periscope with a special compensating viewfinder and a remote control to press the trigger of the camera. This would have to be steadied, possibly suspended from a strap around the neck or with the "foot" in a waistcoat pocket or an extension to the ground. For unless you make that tilting top and compensating viewfinder, the camera can only be tilted forward by leaning it right over, and that can be very awkward. (Compare figures 1A and 1B.)

The alternative was to keep the gadget as small as possible, which meant holding the camera in the hands above the head and having a special viewfinder with some sort of optical compensation for tilt. (See Fig. 2A.) You will notice that in tilting the camera 45°, the mirror has turned forward in relation to the camera only about 12° and that, were the camera to be turned down 90°, the mirror would need to move only 45°. (Fig. 2B.)

Could this be done by means of some sort of simple pendulum or balancing? The problem occupied my mind at odd moments for several days, and a number of ideas including the obvious cam were discarded until I hit on the idea illustrated in Fig. 3A. I made a mockup out of strips of cardboard 2 inches wide, using rubber tape hinges, and estimated that it worked near enough to be useful. The horizontal strip represents a baseboard which fastens below the camera, by means of a tripod screw. M is the mirror and W is a weight—the card-



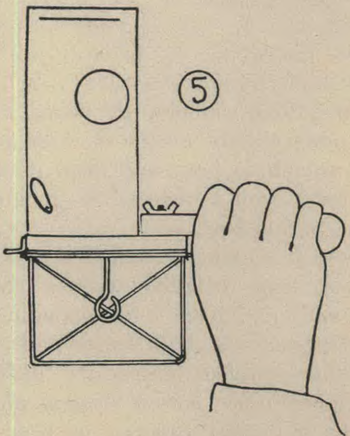


FIG. 4 (above) is side view of device, showing means of suspension of variable mirror and the counterweight. Fig. 5 is view of camera and gadget from rear, showing sight and centering ring.

board being made long enough to counteract the pull of the mirror.

As the mirror has to move through only half the angle which is turned by the weight when the camera is tilted (Fig. 3B), the connecting piece was fixed so that AB is about half of CD. I realized when the thing was assembled that the connecting piece DB need not be rigid and that, if flexible, the whole affair could be folded fairly flat when not in use. Here then was a possible arrangement which could be used above the head if a 45° mirror were fastened to the front of my spectacles.

Fig. 4 shows the final arrangement. While it would be nice to have it smaller, this is impossible as the frame of the finder would have to be about five or six inches across in order to give a correct view at arm's length above the head. I failed to find a mirror of very light weight and had to content myself with a small handbag mirror 3½ by 2½ inches, purchased from a dime store. This fixes the width of the board and limits the width of the finder frame.

When the gadget is fitted to an old Dekko camera having a one-inch lens, the image seen in the viewing mirror is nearly that taken in by the camera lens. Where the gadget is used with a one-inch lens on other 16mm cameras or a half-inch lens on 8mm cameras, the image is about two-thirds that covered by the camera. So we have a reasonable margin of safety—useful when taking a subject under such tricky conditions.

The baseboard—just over 3½ inches wide and 7½ inches long—is made of 5/16 inch plywood. A metal strip (1/32″) is screwed to each side so as to project 3/16″ below the bottom of the baseboard. These strips are drilled at A, B, C, and D (Fig. 4) to take thin rods that form spindles which the frames F, sight S, mirror M and weight W are to hang. The hanging wires for the frame and sight are a little thinner (just over 1/16″ galvanized iron) and are bent to size, with ¼″ 'feet' to make strong soldered joints with their spindles. The near ends are tapped 6BA, a small nut inside the metal strip being soldered and a knurled nut fixed outside. The frame and sight can thus be folded up but also can be set up quite rigid when in use.

The mirror M is held at each side by a slightly curved piece of ⅜″ steel strip (1/32″), turned up at the ends to clip over the top and bottom, as shown in Fig. 4. Made a little too small, the strips can be sprung over each end of the mirror and fit tightly. A piece of the wire with a loop in the middle is soldered nearly half way down the back of the mirror, joining the two metal strips G. This wire corresponds with the

(Continued on next page)

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point D in Fig. 3A. The loop is to take the cord DB.

The frame to hold the weight is made a little wider than the mirror in order to clear the mirror when folded up. The spindle, extending about 1/4″ each side of the metal side strips, is bent down at the ends and to it 3½″ rods are soldered. The counter-weight, consisting of a length cut from a bar of hard solder, is soldered to the bottom of the hanging rods W. A steel strip with a hole drilled in the middle (E) is soldered at each end to the two hanging rods — near the top — the hole corresponding with the point B in Fig. 3A.

I tried one or two arrangements to secure an adjustment of the length of the cord from mirror to weight, but found complications in the movement of the mirror unless there was a straight line from mirror to weight (G to E). The cord is therefore passed through the hole and winds around a screw—a half inch to one side of the hole. The length of the cord is adjusted by turning the screw.

This screw is made of a very short piece of rod, tapped 6BA at one end with the other end bent into a small ring. The screw-thread passes through a hole drilled in the strip, with a small nut on each side of the strip. The nuts are screwed down hard and then both are soldered to the rod. With pliers the screw can be turned in its hole in the strip and, once moved, can be turned with the fingers. When the cord has been set to correct length, it does not slip.

THIS ARTICLE, which describes the construction and use of a most useful gadget for 8mm and 16mm cine cameraists, is reprinted with permission from the June, 1953 issue of Amateur Cine World, British publication for amateur movie makers. Author Walden, a regular ACW contributor, has built a number of interesting and ingenious gadgets which he will describe in subsequent issues of that publication. For further information about AMATEUR CINE WORLD, write to Gordon Malthouse, Editor, 46-47 Chancery Lane, London W.C.2, England.—Ed.

Now for one or two lesser points. You'll see from Fig. 3A that unless the weight is very heavy or a long way from the spindle, the mirror will tend to pull the weight forward. To help to overcome this, the weight itself is therefore fixed in front of the rods from which it hangs.

The shape of the viewfinder frame is in the usual 4:3 ratio. The width is fixed by the width of the board. Cut or tear a strip of paper that width. Fold it in four and cut off the end fourth. The remainder is the height which the frame should be made. Again fold this piece of paper in two and cut in half. This is the height of the sight (S).

The steel strip and spindles are partly from a Juneero set and the strip was cut, bent and, in fact, punched (not drilled) with this handy little tool. This saved a lot of time. Unfortunately—so I am told—it is no longer on the market and I am on the lookout for a source for substitutes, particularly the strip (3/8" x 1/32"). The soldering was all done *in situ* with Baker's flux, which I find much quicker than resin. The whole thing is a bit rough in appearance but then it has stood up to a good deal of rough usage.

Now that I'd made it, how to hold and use it? The camera would obviously be fixed on top by means of a 1/4" Whitworth winged bolt through the baseboard. The trigger would also need to be near the edge of the board, in reach of a finger, and it would have to be held so that the hands do not foul the movement of the mirror or obscure the picture.

The answer, as can be seen in Figs. 4 and 5 is a 6" length of broom handle fixed by butterfly nut above the board at right angles, on the side away from the camera trigger. In addition, a small angle piece, actually consisting of a small loop of bent wire, is soldered to the metal side strip just below the trigger. This rests on the ball of the thumb and helps to steady the camera, whether the cameraman faces forwards or backwards.

In use, the camera is held up and is first moved so that the eye sees the crossed wires in the middle of the sighting ring. If the sight appears too low the camera must be moved back, i.e., with arms more upright, and *vice versa.* If this is not a convenient position for the arms, the length of the cord must be adjusted until it is. Camera too much overhead? The cord must be lengthened. The sight is to left or right of the crossed wires? Tilt the camera to left or right.

Once the camera position is found, the camera can be tilted on the axis of the handle and the sights remain in line, i.e., for a pan down or up. It is effective for about 45° down, and about 20° up. to turn from left to right, i.e., to pan, swing the whole body. The camera can be held very steadily if one can rest the far end of the board—that is, at the back of the camera itself—against some solid support, such as a wall or lamp post. It is therefore as well to ensure that the end of the board overhangs the weight sufficiently, or it may be fouled. Otherwise fit a peg or rubber buffer to the end of the board. Also, the camera could rest on a collapsible stick or rod,

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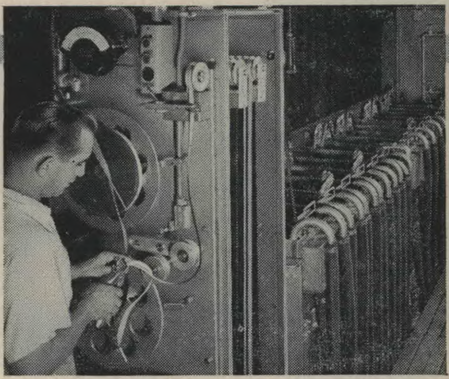

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with trunnion top to fit pegs in the sides of the board. But this again is an added complication.

I did wonder whether the whole gadget should be enclosed to avoid the effect of wind (with lighter materials this might possibly have been necessary), and whether difficulties might arise from a swinging pendulum effect. It is, however, quite simple to rest the side of the hand momentarily against the mirror or weight to bring them to rest.

If, in fact, you prefer the simplification, the mirror can be fixed with a locking screw, in the same way as the finder frame and sight, and the weight thus dispensed with altogether. But that will mean that only a very small angle of tilt can be used, or you fall backwards. Alternatively, if you attempt to alter the angle of the mirror by hand during shooting, there is one more variable to be taken care of, and there are quite enough already! So unless tilting during shooting can be avoided, I recommend the use of the weight.

So there it is! As I say, it looks a very rough and ready affair, but in my hands, at any rate, it works well.

PRODUCTION PLANNING

(Continued from Page 543)

director reading the script aloud to his technicians, explaining it as he goes along and answering any questions that they might have. It is advisable for all present to make notes of any ideas they may get while the script is being read.

When the reading of the script has been completed, the producer should then explain to the group what approach or *slant* he has in mind for putting the story on celluloid. He should ask for suggestions and encourage any ideas that will make the picture more effective in any way. It is only a second-rate producer whose pride will not allow him to recognize and use good suggestions submitted by others, merely because he himself was not the originator.

It is during the preliminary conference that any obviously impractical features of the script can be discussed and revised, if necessary. Far better to do it at this time than try to correct mistakes after a sequence has already been filmed.

After the conference, the producer and his assistants should be ready to make the *production breakdown.* Actually, this amounts to dissecting the script into its separate scenes and sequences in order to estimate costs, set up a *shooting schedule*, and determine the requirements of each scene in terms of cast, props, locale, etc.

The director and the cameraman should go through the script scene by scene, discussing each camera set-up and determining how it is to be executed. Both should know in advance of shooting just exactly what each set-up is and how, when and where it is to be filmed.

Simple scripts for home movie films can usually be shot in sequence without undue trouble, since such stories are relatively uncomplicated and take place in a confined locale. But when a more intricate feature, either photoplay or commercial, is to be shot, it is usually a good idea to group the scenes for camera angle, locale, cast, etc.

For a typical example, let us say that scenes 2 and 82 both take place in the same locale, one that is some distance away. Obviously, instead of making two different trips to that location as the scenes come up in sequence, it would be more convenient as well as economical to shoot both scenes at the same time, even though they were to appear at widely separate points in the story. Similarly, if certain cast members were to be shown in scenes 5, 43 and 102, it would be more logical to shoot all these scenes together, if possible, than to call the players back at three different times, or keep them waiting around during the entire filming.

The most ambitious step in breaking down a production that is at all involved, is to prepare a separate *dope sheet* for each scene. On this sheet is recorded, in separately ruled spaces, data as to the locale, cast required, whether interior or exterior, lighting set-up, props, costumes, special effects, etc. It is even advisable to include a diagram of the camera angle, or a rough sketch of the composition of the scene as it is to appear in the frame. Also on this sheet, spaces should be left to fill in during shooting the running time of the scene, exposure used, and any other technical data concerning the take.

Having made the *breakdown*, the producer is then ready to set up a *shooting schedule.* Grouping his shots for maximum efficiency, he estimates how long it will take to shoot each scene. In doing so, he takes into consideration the manner in which his technicians work on the set as well as unforseen holdups that may delay shooting. He will also consider the matter of locale. For example, if Sequence A and Sequence D are to be shot in locations that are close together, it would be wise to schedule them for shooting consecutively in order to save time in transportation.

Once the *shooting schedule* has been set up and approved, it should be rigidly adhered to throughout the shooting of the picture. A well-defined *schedule* will result in a smoothly functioning production.

Next to be considered is the matter of budget. No matter how much highbrow film-makers may rave about "Art for Art's Sake" and the observation that "money does not make the picture," the fact remains that in the making of any film there will be certain necessary expenses. In the case of the home movie, financial outlay may simply involve the cost of the film with processing included. On the other hand, a commercial or documentary film may involve sets, cast, technicians, processing and film costing thousands of dollars.

The objective of the intelligent film-maker is to get the most apparent *production value* into his picture with the smallest possible cash outlay. This can be accomplished if a practical budget is drawn up beforehand, and if over-elaborate tricks are avoided.

An essential step in budget-planning is to get actual cash estimates on every expenditure that must be made. These can be had by speaking in advance to the technicians and craftsmen involved, finding out from them just what each item will cost, and asking for suggestions to help keep the film within its budget. Try to get these estimates down to the penny, and then allow an additional 10 to 15 per cent for unforseen expenditures.

Avoid effects or devices that will involve a great deal of expense. Usually, if some thought is applied to the problem, ways can be found to achieve a similar effect without stretching the budget.

Backgrounds are very important, not only as a story-telling element, but as a way to add pictorial quality to a film. They should never be merely thrown in because they are pretty; always the background should be motivated by the dramatic requirements of the scene. Nor is it necessary for effective backgrounds to involve a great deal of expense. Remember that interior backgrounds cost money because they require artificial lighting. Therefore, it is best to slant the action so as much of it as possible can logically be filmed outdoors.

It may be necessary to hunt up these exterior settings by means of scouting trips made in advance. If you do not find the exact backgrounds required, slight changes in the script will often allow a satisfactory compromise.

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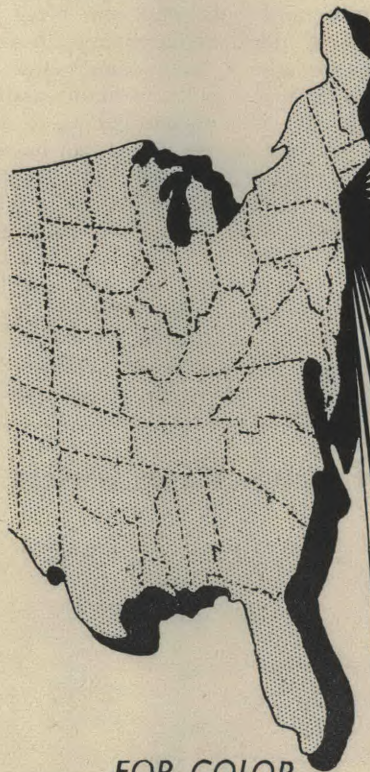

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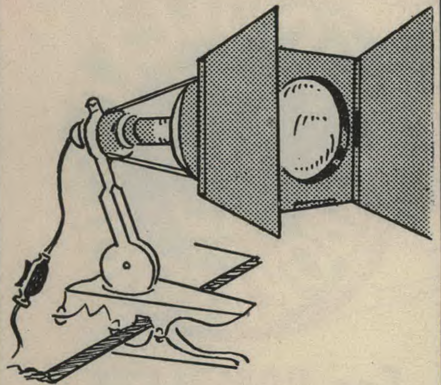

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When the settings you choose are private property, get the owner's permission in advance before shooting pictures there. Most laymen are sufficiently fascinated by the idea of motion picture production that they readily give their consent just for the novelty of watching a crew of movie-makers at work.

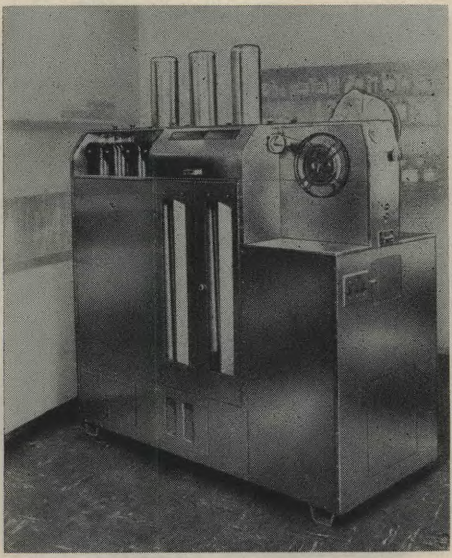
Props and costumes can often be borrowed, thus saving money on rentals—although it may take some inquiries in order to find suitable materials and people who are willing to lend them. Rentals of equipment can be held to a minimum by intelligent grouping of scenes. For example, where the script calls for interior scenes, scattered throughout the script but totalling two weeks of actual shooting time, schedule all interiors for filming consecutively so that lighting equipment need only be rented for that two-week period.

Film costs, of course, vary with the type of motion picture that is being made. If you are shooting a home movie, it is convenient to shoot reversible film which is sold with the processing charge included. If, on the other hand, you are shooting a production or commercial type film (especially one that is to have sound added later) use negative film from which multiple duplicate prints can be made. The processing of negative stock is usually *not* included in the purchase price, so you must count on an extra laboratory fee.

Where the picture is of a commercial or semi-commercial nature, you may be entitled to a professional discount on film amounting to as high as 25 per cent. This is especially true when film is purchased in large quantities. Your local wholesale film dealer will be able to tell you whether or not you are entitled to the discount.

Just before shooting is scheduled to begin, it is advisable for the producer

Rapid Processor For Television Films



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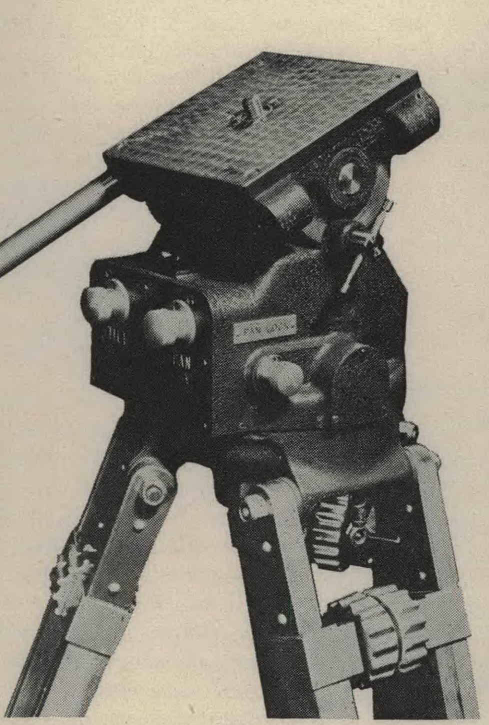
Light-tight hoods over the first three processing tanks permit the machine to be operated in ordinary light. Only a small darkroom (such as a closet) is required for loading the film in the light-tight daylight-loading magazines provided with the equipment. Any length of film up to 1000 feet may be loaded in one of the two magazines, permitting rapid processing of short spot news films or continuous processing of complete programs.

Just about all of the features of the commercial type laboratory processors have been included in the design of this portable 16mm rapid processor such as stainless steel construction, temperature control, replenishing systems for the three critical solutions, air agitation, developer recirculation system, air squeegees, and infra-red drying. The unique Houston-Fearless film transport system, which automatically compensates for expansion and shrinkage of film during processing, prevents film slippage, breakage and stretching.

The manufacturer stresses that a minimum of servicing is required and that the ease of maintenance was one of the considerations when the machine was being designed. All plumbing is on the outside for ready access, and the tanks are easily removable if desired.

Complete specifications and price of this equipment may be had by writing to the manufacturer, Houston-Fearless Corporation, 11809 West Olympic Blvd., Los Angeles 64, Calif.



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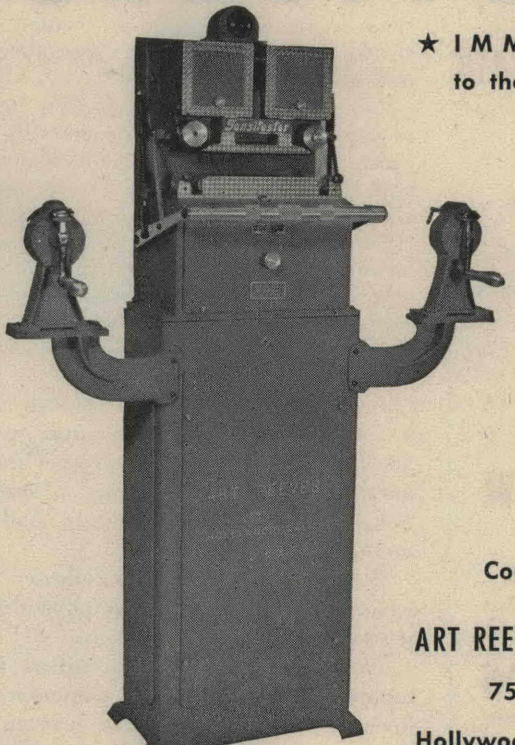
to call his cast and crew together for a last minute conference. It is at this time that all the loose ends of production can be drawn tightly together and any final problems settled.

If pre-production planning has been carried out carefully and with attention to detail, the actual shooting of the picture should be relatively easy and uncomplicated. Studying his *script and dope sheets* before each day's shooting, the director will know in advance just what is to be done the next day. If his crew is similarly well-oriented, there will be no indecision on the set, nor costly hold-ups in shooting, nor ill-advised compromises arrived at on the spur of the moment because some detail of planning was overlooked.

The director has presumably rehearsed the action of each scene with his actors before arriving on the set, but there will, of course, have to be rehearsals just before shooting so that the lighting, camerawork, sound, and other technical details can be co-ordinated with the action.

Where the film is later to be sound-narrated, the words of the narration should be read aloud during rehearsals so that the action can be keyed to the narration.

The director's assistant should make sure that all elements of the scene, human or otherwise, are available on the



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set before shooting is scheduled to begin. Last minute dashes to secure personnel or properties never help to make for a smooth-running shooting routine.

Pre-production planning is of paramount importance to the success or failure of a motion picture. On it will depend whether the resulting film is a cinematic hodge-podge or a fine piece of entertainment. The advanced amateur and semi-professional film-maker can profit by adapting for his own use the pre-shooting routines followed in the professional film studios. Such care in planning cannot help but show up favorably on the screen.

The foregoing article is adapted from the Cinema Workshop series, by Charles Loring. —Ed.

NATURAL VISION

(Continued from Page 535)

other for each scene, these tolerances could not be maintained.

(2) Nor did we feel that from the visual point of view the changing of the interaxial was consistent with physiological fact. The interaxial between the two human eyes is constant. Normally stereo is greater for near than for far. In changing the interaxial, the reverse is true: stereo is decreased for near and increased for far. In the cutting—from long to medium to closeup shots—changing of this stereo point of view was very apparent and disturbing. Since stereo is more effective for near than for far, to decrease it would be to defeat our initial purpose of photographic realism. In other words, we wanted our stereo to be natural and constant, and not off and on.

(3) Modern motion picture techniques are dynamic in concept, with the camera moving, panning and dollying, and the principal actors in the scene also moving. If the stereo set-up is calculated for a still set-up, these dynamic techniques are therefore limited. In other words, a still camera set-up was static, and we felt that the system should be flexible and dynamic as the action of the scene itself.

It then followed that if we felt that a feature-length motion picture could be shot in the so-called variable interaxial system, could we find a system that would be compatible to modern motion picture techniques?

We felt that if a system followed the basic laws of the human eye physiology, it would work.

The Equipment: It was indeed fortunate that veteran camera engineer and inventor Friend Baker was selected to design the equipment, and also master camera technician O. S. (Buddy) Bryhn to build the first camera mount. Mr. Baker had been working in stereo for more than twenty years, and had designed and built an excellent stereo adaptor for a 16mm camera. This adaptor placed the stereo pairs on one film, and had a fixed interaxial and variable parallax control.

We were able to film some test scenes of cars and engines with this 16mm equipment, and were highly pleased with the results. We felt that Mr. Baker's ideas of rigid camera line-up and matching, and the fixed interaxial and variable convergence (which simulates the human eye), together with his practical experience in motion picture photography, would enable him to invent and design a camera mount that would work.

And so we consumated a deal with Mr. Baker to invent and design a 35mm 3-D mount with fixed interaxial and parallax control. Mr. Bryhn built the camera mount. And it worked. With this camera was filmed the first Natural Vision pictures — "Bwana Devil," "House of Wax," and "Charge at Feather River." Of course improvements were made as we went along, and the mounts that followed were much improved and indeed beautiful precision mechanisms. But basically they were the same as our first. And as our work progressed, the camera crews refined the techniques in using the cameras.

The camera mount was designed to synchronize two standard Mitchell 35mm NC cameras. The mount was made so that the two cameras could be permanently and accurately lined up with each other, and to withstand the rough jarring that is required of cameras in making a modern motion picture. The mount was so designed that the cameras could take the usual battery of lenses from 35mm to 100mm. The

ABOUT THE AUTHOR

A prominent Beverly Hills eye surgeon, Dr. Julian Gunzberg is also vice-president of Natural Vision Corporation; Senior Attending Ophthalmologist of the Los Angeles County General Hospital; Diplomate of the National Board of Medical Examiners; Diplomate of the American Board of Ophthalmology; Fellow of the American Academy of Ophthalmology and Otolaryngology; Associate Professor of Ophthalmology, College of Medical Evangelists; and Associate Attending Ophthalmologist, Cedars of Lebanon Hospital, Los Angeles.

A distinguished non-professional still photographer, Dr. Gunzberg served as visual consultant on the following 3-D film productions: "Bwana Devil," "House of Wax," "Charge At Feather River," "Fort Ti," "The Moonlighters," "Camels West," "Devil's Canyon," "Top Banana," and "Magog."

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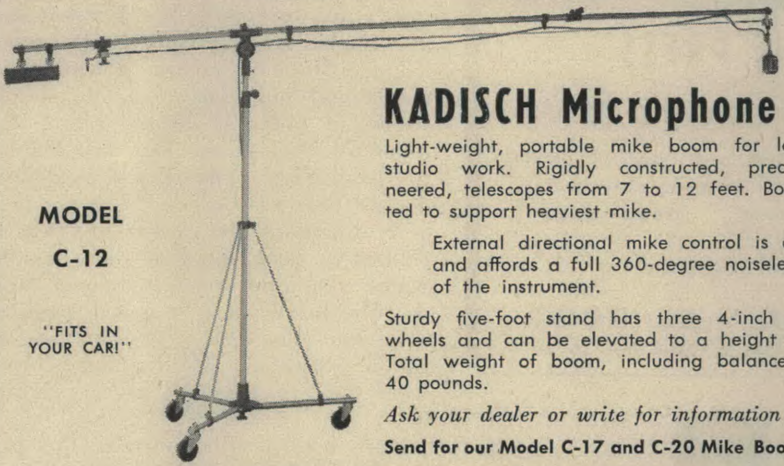
lenses were coupled with each other so that focusing between the two cameras was in absolute synchronization, and focusing changed during the taking of the scene as in normal 2-D one-camera photography.

The two rigidly mounted cameras faced each other and took their images off two accurately placed front-surfaced mirrors placed at a 45-degree angle to the film plane of the cameras, and hence 90 degrees from each other. This meant that the optical axis of each camera lens was projected straight ahead and parallel to each other. The distance between these two optical axes was the important interaxial, and the distance we selected was three and one-half inches. Why we selected this interaxial distance will be brought out shortly.

The two mirror posts were designed also for rigid alignment, and were coupled with each other so that parallax could be accurately changed during the shooting of a scene, with the same facility as varying the focus of the lens. This accurate control and ability to vary the focus and parallax during the taking of the scene became the crux of our system.

Besides the making of the camera mounts, the two cameras had to be matched in every detail. Every phase



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of the camera mechanism had to be in precision synchronization, each pair of lenses accurately matched. Also a tremendous amount of work went into experimentation with mirrors, and in synchronization of the shutters so that they were exactly frame for frame.

Why was three and one-half inches chosen as the interaxial constant? It was selected because it was felt that it gave the best over-all stereo picture. The picture looked natural to the eyes. The stereo distortions and the separations were easily controlled, and this interaxial made for good design of the mount, and had many mechanical and optical advantages. And in comparing the human eyes, with their shorter focal length optical system and smaller viewing field, with the larger viewing field and longer focal length lenses of the 35mm cameras, a 3½-inch interocular would be comparable to the 2½-inch interocular of the human eyes.

NOTE: Next month, Dr. Gunzberg will outline in detail the basic concepts of the Natural Vision system.

WITH A SCRIPT, A PLOT AND A STAR

(Continued from Page 533)

The first production was sent off to the Navy Photographic Center at Anacostia, Md., accompanied by a script showing the shot-by-shot breakdown and the suggested narration. Processing, editing and dubbing would be done there.

The next picture, aimed at TV, dealt with the building of the 1st Marine Aircraft Wing Memorial Orphanage at Pohang, South Korea. The entire planning and construction of the orphanage were re-enacted by "actors" drawn from the Marine ranks, which were headquartered nearby. South Koreans taking part in the film depicted the roles they had played in the actual establishment, and more than a dozen orphans from the institution were used. The film was shot in 16mm Commercial Kodachrome, using a Mitchell camera. A double-system sound unit was used for several scenes in order to record actual dialogue by Marines and Koreans. The entire project was completed in four days, despite bad weather.

At this point, the camera unit was so riddled by rotation of personnel to the States, that additional personnel from the Marine Wing was called upon to help out. I became a director by the simple expedient of a printed order from the ever-present "higher authority."

Our third production was the personal brainstorm of Major Tom Saxon, public information officer for the Marine Air Wing and my boss prior to my temporary reassignment.

"Why not a story on helicopter evacuation as told from the camera's angle?" he wanted to know. There were explanations about inadequate equipment and lack of technical devices for such a project. It was an intriguing thought, however, and I set to work on a script, while the two cameramen who would work the show watched to be certain I wouldn't demand the totally impossible.

The story was aptly titled, "I Am A Casualty" and was a simple story which began with a piece of stock footage taken aboard a hospital ship in black and white. The narration pointed out that the narrator might be any of the men present and offered some comments about the efforts to save lives at any cost.

From there, the story flashed back to the Korean front and was done in color. It was a simple tale about a patrol that went out forward of its own lines only to be caught in an enemy mortar barrage. With two men wounded—one of them the narrator—helicopters were called in and evacuation made to a hospital ship in Inchon Harbor.

Telling this strictly from the camera's viewpoint—making the lens the "eyes" of the narrator—was not as simple.

Cal Larsen, now a chief photographer, handled most of the camera work, assisted by Jimmy Miller, a Photographer, First Class, and Master Sergeant Ralph J. Austin, a Marine movie man, who had been a Navy cameraman at Iwo Jima during World War II and had changed services.

Where possible, the hood of a jeep was used for dolly shots. All such takes had to be hand-held, since the vibration of the engine would cause too much movement for a tripod. When the small team invaded the area of Bunker Hill, where some of the most deadly fighting of the war was in progress, the jeep became an impossibility for obvious reasons. Since the story was being told in a different way, stock footage could not be used. Scenes sometimes ran for as long as a minute before a fade or a dissolve could logically be used. Since all was being told through the camera's "eyes," it was considered unrealistic to break the sequences with shots from varied angles.

"That guy, Robert Montgomery, didn't know what he was doing to us, when he did that 'Lady in the Lake' thing," Miller grumbled one morning as a group of Marines were going through their paces for the camera.

As director of the opus, I was using a technique which I had seen pay off in Hollywood quickie production. It consisted of a series of "dry runs." First, everyone concerned was briefed on the scene with it being read and explained in detail. Each "actor" was given specific instructions as to his actions, and the cameramen offered whatever additional thoughts might make their job easier. The sequence was then rehearsed while the camera crew followed the action without actually shooting. If the bit went off right, the next run was a "take." During the entire four-day shooting schedule, we never shot a scene—as long and as involved as most of them were—more than three times.

"Star" of the picture was Sergeant Don Kassera, although it isn't likely he'll be recognized back home in Plum City, Wisconsin. The only parts of his body that appeared in the entire film were his hands, feet and legs.

A helmet held over the camera and tilted just enough so the steel lip was in the frame, plus a rifle pushed into the shot at an angle, gave the impression that the camera actually was the "hero."

In the patrol shots, Kassera walked beside the cameraman, holding the rifle before the lens to offer the impression of a man carrying the weapon.

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Unable to get footage of a patrol caught in an enemy barrage without endangering more lives than our own, we called in a special effects man in the person of a demolitions officer. In all, nearly two hundred pounds of TNT were planted and wired in a small valley and the scene rehearsed twice before the demolitions were set off for the "dress rehearsal."

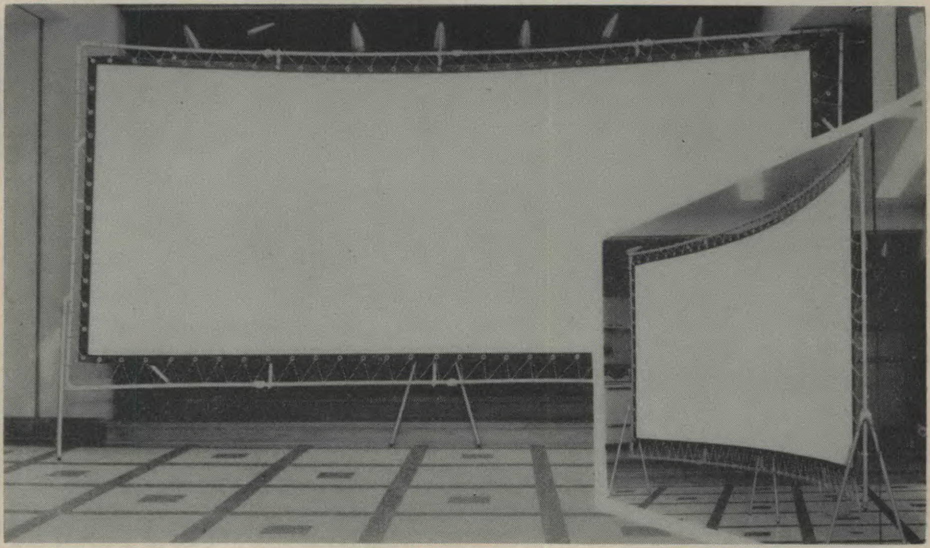
It required no urging for the battle-hardened Marines to hit the dirt as the first simulated mortar shell exploded only a dozen yards from them and sprayed the area with sand and gravel. They went on hugging the ground as more explosives "walked" toward them. During this sequence, Larsen, carrying an Eyemo with a 400-foot magazine, walked up the valley, stepping as carefully as possible to avoid the inevitable "jiggle." Miller crept along beside him, carrying the heavy case of batteries which powered the camera.

At the first explosion, Larsen dropped, first to his knees, then to his belly, camera still grinding. He then panned to the explosion and followed the others as they were set off. Meantime, Kassera shoved the rifle into the shot to show that the "hero" was prone like the others.

Near the end of the sequence, an explosion was set off some thirty feet in front of the camera and he panned just in time to catch the settling dust.

It was the next explosion, much closer, that was supposed to "get him," and we originally had planned to do this with a telephoto lens for the sake of safety. Larsen balked, claiming the shot would seem out of proportion because of lens distortion. We solved it by setting up a one-pound charge a bare six feet from the camera. Larsen and I filmed this blast on a given signal to the demolitions man, then waited out the hail of pebbles that rained down on us.

Wide Screen For 16mm Presentations



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At the same time, the film was "blacked out" by cutting down the exposure, giving the impression that the subject had been hit and rendered unconscious by the blast.

We allowed several seconds of totally unexposed film to run through the camera, then slowly refocused with an in-and-out effect on the leaves of a tree overhead. Lying flat on his back to shoot with his hand-held Eyemo, Larsen panned as Kassera slowly brought his "blood soaked' arm into the shot, showing that he was badly hit. A corpsman and the patrol leader came into the shot as the "man" tried to sit up, getting a glimpse of the other wounded Marine and of his blood-soaked and torn trousers.

The real blood we had intended to use was a priority item on the Korean front so we substituted red ink liberally shaded with Korean dirt. Sergeant Kassera is probably still trying to remove it from his skin.

One of the better effects of the film, we felt, was when the patrol leader lit a cigarette and pushed it under the camera for the wounded man to take a drag. In reality, it was Miller who inhaled and then allowed the smoke to

(Continued on Page 561)

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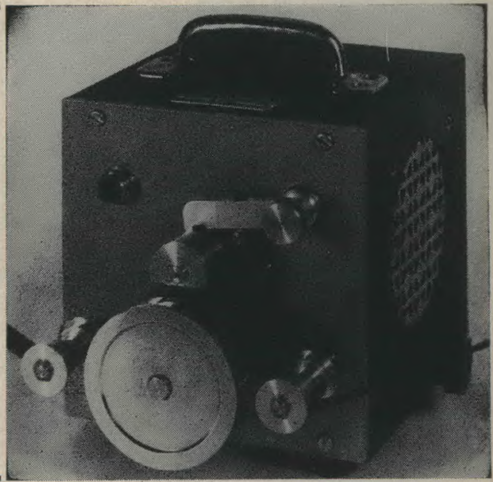

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curl up past the lens as the victim exhaled.

Larsen followed the action as a helicopter arrived on the scene and continued shooting as he was loaded on a stretcher and actually carried to the evacuation pod and strapped in. Another helicopter was shown entering the area to pick up the other wounded man.

The battery was loaded into the pod with him and shots were taken in this prone position, while the copter whipped through the air at more than sixty miles per hour. Larsen took advantage of the situation to pan back and forth to show the determined face of the pilot flying his plane and to show the second copter which was flying with him. The fade out came as the plane tipped up and he could get a shot of the white hospital ship with the mammoth red cross painted on its sides.

Since the laboratory was in the Eastern United States, and there was no possible way to see rushes, the entire crew sweated for nearly two months before word finally came back in the form of an official report.

The exposure on the 35mm Ansco Color had been exact and the content was something entirely new in combat photography. We were all in Tokyo when this word was received.

There was quite a celebration along the Ginza, Tokyo's Broadway, that night. But at four o'clock the following morning, all hands were bound for Korea once more.

EXTENSION TUBES IN CINE PHOTOGRAPHY

(Continued from Page 545)

cause the focal length—imposes certain limitations on all the other specifications. Thus, if sharp focus is to be maintained at all, it can only be done by making compensating alterations to regain a balance of factors.

It would be easy to end the discussion here and simply say, "No, it can't be done." But if one asks, "Can I get a picture with my camera lens extended ½-inch, using an appropriate extension tube?" the answer could very well be "Yes." Here we get into the elementary law of optics which deals with what is known as conjugate foci. Here we find that a fixed focus lens of any given focal length can have its object and image reversed—i.e., the size of image and size of object in direct proportion to the distances involved. The most common example of this occurs in the reversal of image and object in the case of projection as compared to photography. In the latter, we have an image on film which is photographed in the usual manner. When projected, the same image, with the aid of a light source, is pushed back through a lens system, similar to the one used in photographing it, and the object is thrown back to pseudo infinity. Were the lens used in projection of the same focal length as that used in photography, and the distance-to-screen the same as the object-to-camera distance, the projected image would be the same size as the original subject.

With this explanation, we establish a foundation on which to advance the principles of conjugate foci as employed in photography with extension tubes. And we might also attempt to clarify the meaning of this term: Foci, of course, is the plural of focus; conjugate, in this instance, means "combined in pairs." Roughly then conjugate foci are the distances from the lens to the image, and from the lens to the object.

The standard cine camera lens is first considered in focus at infinity. By increasing the distance from lens to film, it then becomes necessary to shorten the distance from lens to object to arrive at the conjugate foci. The greater distance that is selected for the focusing tube, the shorter will be that distance from lens to object. This involves something of a problem in photography, as often the lens is so close to the object that it is difficult to illuminate it. As the distance is increased, the size of the image is also increased.

A few of the fundamentals may be important to the reader; the simple rules which should be applied pertain to the image size. When a lens is extended to a distance which is twice its focal length, and the object is also placed the equivalent of two focal lengths distant, the film image will be the same size as the object. This is almost the limit for short focal length lenses such as used in cinematography, although telephoto lenses require longer extension tubes to retain this proportion.

In undertaking cinematography with extension tubes, it is necessary that there be some method of reflex or through-the-lens focusing employed. This is because the area covered by the lens will be very small, and parallax will be a problem. Also, careful focusing is necessary due to the extremely limited depth of field—actually almost nil.

The answer to the second question posed by the filmer referred to in the opening paragraph, viz., "Will use of extension tubes reduce the original f

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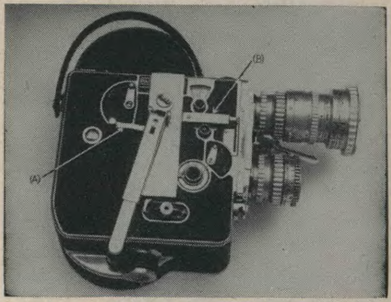

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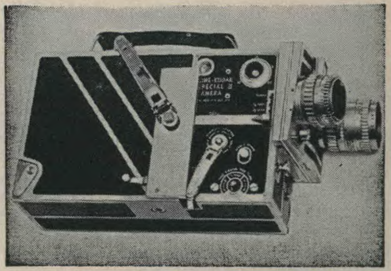

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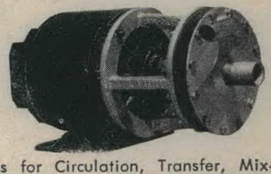

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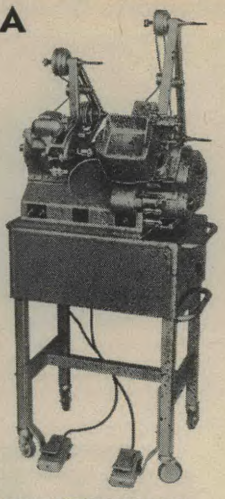

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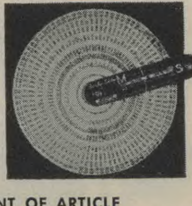

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value of the camera lens?" is *yes.* The f value of the lens will be changed and it also will be necessary to determine a complete new set of f values for the lens *when it is to be used with extension tubes.* Below is a mathematical formula for this. In order to keep the explanation as simple as possible, we will consider the use of a 1-inch extension tube with a 1-inch lens. This makes it simpler mathematically to apply the formula for exposure. Here the lens measurements have been converted to millimeters—the 1-inch lens equalling 25mm.:

$$\frac{\text{Distance of lens to image squared}}{\text{Focal length of lens squared}}$$

or

$$\frac{50 \times 50}{25 \times 25} = \frac{2500}{625} = \frac{4}{1}$$

The exposure, therefore, for the tube-lens combination in question, must be increased 4 times. Thus, if an exposure meter reading indicated an exposure of f/8, for the 1-inch lens alone, it would be necessary to set the lens at f/4, when using the lens with an 1-inch extension tube.

If we take the problem of the tube-lens combination suggested by the filmer, i.e., the ½-inch extension tube with the 1-inch (8mm camera) lens, the lens to image distance is 1½ times the focal length, which produces an image size equal to one-half that of the object. In this case, however, the distance of the object from the lens must be increased to obtain sharp focus, thus (here again the lens size is changed to millimeters, 1½-inches equalling 37.5mm):

$$\frac{37.5 \times 37.5}{25 \times 25} = \frac{1406.25}{625} = \frac{2.25}{1}$$

. . . in which case the exposure must be increased 2¼ times. The new f value of, say, f/3.5 would become approximately f/5.

In this same example, the distance at which the object should be placed is determined by the following formula:

$$\frac{\text{Focal length of lens plus Focal length of lens}}{\text{Magnification (or reduction)}}$$

or

$$\frac{25 + 25}{0.5} = 25 + 50, \text{ or } 75\text{mm}$$

(converted back to inches equals 3)

Where it is necessary to calculate the revised f value of a certain lens-tube combination to correspond with the lens stop indicated by an exposure meter reading, divide the f number (indicated by the meter) by the sum of the focal length of lens and the extension tube. Then multiply this figure by the focal length of the lens. The result will be the f stop at which the lens should be set in order to achieve the exposure indicated by the meter.

Many desirable effects can be obtained in both 8mm and 16mm movie making through use of extension tubes in photographing small objects at very close range. This field of cinematography bridges a gap between conventional cine photography and that other extreme known more professionally as photomicrography, which produces motion pictures of objects highly magnified that otherwise could only be filmed with the aid of a microscope of rather high magnification. END.

'MAN WITH 1000 HANDS'

(Continued from Page 536)

Palmer's reasoning carried him along to another logical conclusion: here was a golden opportunity to pioneer in another field, to do a job of enlightened public relations. His script contained not one mention of the sponsor's name.

Director McDougall, his chief cameraman, Bob Martin, and the balance of the Associated Screen location crew lost little time getting to work at Kemano. Heavy lighting equipment was brought up to illuminate the interior of the huge hole in the mountain that was to be the main powerhouse chamber. When shooting finished there, they proceeded to Nechako, which was to be the site of the dam. Thence on to Kildala, which was ultimately to be the route of the transmission line, then on to Kitimat itself, where the aluminum smelter and the townsite proper were to be built.

After a good initial start, weather conditions became extremely bad, and unexpectedly interrupted the filming schedule. The shooting log at the end of the job revealed that less than half the total number of days were suitable for photography. Rain, fog and heavy overcast were the principal villains causing the delays, and the total elapsed time for the crew's original departure from Vancouver to their return to that city was seven-and-a-half weeks. Yet the original schedule called for an overall time lapse of not more than three weeks.

A total of twenty thousand feet of 16mm color negative was exposed during the time the ASN men were shooting. This exposed film was flown from the site of operations each shooting day to Vancouver. Arrangements were made by the International Harvester Co. of Canada Ltd. at that point to have a courier standing by to transport the film across the border and to Seattle,

(Continued on Page 564)

Current Assignments of A.S.C. Members

Major film productions on which members of the American Society of Cinematographers were engaged as directors of photography during the past month.

AMERICAN SOCIETY OF CINEMATOGRAPHERS

FOUNDED January 8, 1919, The American Society of Cinematographers is composed of the leading directors of photography in the Hollywood motion picture studios. Its membership also includes non-resident cinematographers and cinematographers in foreign lands. Membership is by invitation only.

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ALLIED ARTISTS

- Ellis Carter, "Arrow In The Dust," with Sterling Hayden. Lesley Selander, director.
- Harry Neumann, "Paris Bombshell," with L. Gorcey, H. Hall. Wm. Beaudine, director.
- William Sickner, "Off The Record," (L. Parsons, Prod.) with Barry Sullivan, Dorothy Malone. Harold Schuster, director.

COLUMBIA

- Henry Freulich, "Saracen Blade," (Esskay Prods.) (Technicolor) with Ricardo Montalban, B. St. John. Wm. Castle, director.
- Charles Lawton, "Little Giant," with Mickey Rooney, Diane Foster. Richard Quine, director.

METRO-GOLDWYN-MAYER

- Paul C. Vogel, "Rose Marie," (Technicolor-CinemaScope) with Ann Blyth, Fernando Lamas. Mervyn LeRoy, director.
- George Folsey, "Panther Squadron," (Ansco Color—Wide Screen) with Van Johnson. Andrew Marton, director.

PARAMOUNT

- Loyal Griggs, "White Christmas," (Technicolor) with Bing Crosby. M. Curtiz, dir.
- Charles Lang, "Sabrina Fair," (Wide-screen) with H. Bogart, A. Hepburn. Billy Wilder, director.
- Ernest Laszlo, "About Mrs. Leslie," (Hal Wallis Prod.) with Shirley Booth, R. Ryan. Daniel Mann, director.
- Lionel Lindon, "Legend of the Inca," (Eastman color, wide-screen) with C. Heston, N. Maurey. Jerry Hopper, director.
- Daniel Fapp, "Living It Up," (Technicolor, wide-screen) with D. Martin and J. Lewis. Norman Taurog, director.

REPUBLIC

- Harry Stradling, "Johnny Guitar," (Trucolor) with Joan Crawford, Sterling Hayden. Nick Ray, director.
- Jack Russell, "The Outcast," with Dorothy McGuire. Wm. A. Seiter, director.

UNIVERSAL-INTERNATIONAL

- William Daniels, "The Far Country," (Technicolor, wide-screen) with James Stewart, Ruth Roman. Anthony Mann, director.
- Carl Guthrie, "Johnny Dark," (Technicolor, wide-screen) with Tony Curtis, Piper Laurie. George Sherman, director.
- Russell Metty, "Magnificent Obession," (Technicolor) with Jane Wyman, Rock Hudson. Douglas Sirk, director.
- William Snyder, "Black Lagoon," (3-D) with Richard Carlson, Julia Addams. Jack Arnold, director.
- Harold Lipstein, "Drums Across The River," (Technicolor, wide-screen) with Audie Murphy. Nathan Juran, director.
- Maury Gertsman, "Tanganyika," (Technicolor, wide-screen) with Van Heflin, Ruth Roman. Andre de Toth, director.
- George Robinson, "Echo Canyon," (Technicolor, wide-screen) with Joel McCrea, Mari Blanchard. Jesse Hibbs, director.

WARNER BROTHERS

- Peverell Marley, "The Phantom Ape," (3-D, Warner-color) with Karl Malden. Roy Del Ruth, director.
- Sidney Hickox, "Them," (3-D, Warner-color) with Edmund Gwenn, James Whitmore. Gordon Douglas, director.
- Winton Hoch, "A Star Is Born," with Judy Garland. Gordon Cukor, director.

INDEPENDENT

- Stanley Cortez, "Broncho Apache," (Hecht-Lancaster Prods.; Technicolor, wide-screen) with Burt Lancaster, Jean Peters. Robert Aldrich, director.

TELEVISION

(The following directors of photography were active last month in photographing films for television, or were on contract to direct the photography of television films for the producers named.)

- Lucien Andriot, "Life of Riley" show, Hal Roach.
- Wm. Bradford, "Death Valley Days" and "Annie Oakley" for Flying A Productions.

(Continued on Page 566)

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"MAN WITH A THOUSAND HANDS"

(Continued from Page 562)

Washington. Here, it was expedited through Customs and airexpressed to Hollywood for processing. Wired reports were made by the processing laboratories each day to the location crew at Kitimat to keep them apprised of the quality of their work.

For five weeks, McDougall and Palmer worked in tandem at the Pat Dowling Studios in Hollywood superintending the editing and rough cutting of the film. By this time, the original concept or idea of International Harvester had grown to much larger proportions, and it was then decided, because of the overall excellent quality of the material, to have the main version run for one hour. A half-hour version for general non-theatrical release was also cut, and this will be available at an early date.

Bill Lava, a noted Hollywood musical director, was engaged to write and direct an original musical score for the picture, which by now had been titled "Man With a Thousand Hands." After seeing the film screened in the Pat Dowling Studio projection room, Lava became so impressed with it, he recommended that the orchestra—originally planned to consist of seventeen musicians—be increased to thirty-three to do full justice to the "Man With a Thousand Hands."

To maintain the Canadian flavor of the picture the well-known stage and film actor, Raymond Massey, brother of Canada's Governor-General, was engaged to narrate the script. Massey also appears in a live-action studio sequence introducing the picture and explaining how it had been conceived and had now sprung to full life.

A special screening of "Man With A Thousand Hands" was arranged a short time ago by the International Harvester Company in Chicago for the editor of one of the leading motion picture magazines in the United States. In a letter to Associated Screen Studios, he expressed his opinion of the film in the following manner:

"I want to extend this word of sincere congratulations to your Director and to the men behind the cameras who filled the screen with the most inspiring footage it has been my privilege to witness in many, many years.

"The word 'epic' is trite and often mis-used, but Kitimat is an epic achievement of mankind, and your people have encompassed the whole, great story of this enterprise into a film that I predict will be translated into many tongues and seen and heard by millions."

PRECISION FILM EDITOR

(Continued from Page 538)

right; from it a shaft with a universal joint extends diagonally downward. Just right of the synchronization-control wheel is the speed control knob; from it a shaft extends vertically downward to a sprocket; and from this sprocket a chain runs leftward to the housing of the combined motor and stepless speed control gear. The V-belt drives to the four turntables are plainly visible, and at the extreme left there is a glimpse of one of the relays that control and reverse the drive motor.

The machine can accommodate either open rolls of film, or film on reels. There is no need to take time out and delay proceedings merely to put film on a reel or take it off one—it can be taken either way it comes. Up to 2,000 ft of film in one roll or reel can be accommodated.

The heart of the Precision Film Editor is the shutterless continuous projector.

The lamp used for projection light is actually a sound exciter lamp of 10-v, 7½ amp rating. Screen illumination at 75-w is ample.

From the lamp the light path is through a condenser lens and then through the film. Film motion is, as the pictures show, lateral instead of vertical. After passing through the film the light enters and traverses a 12-side revolving prism. This prism can be described as a disk of optical glass as high as a frame is wide, rotating horizontally behind the film; this disk, however, is not circular, for its rim has been ground to a duodecagon. Each prism face has approximately the same dimensions as one frame; and the rate of rotation is 2 prism faces per frame in the same direction as the film.

On emerging from this rotating 12-face prism the light beam passes through the projection lens and then into an assemblage of three motionless triangular prisms. These latter perform three functions: by their agency the light

(Continued on Page 566)

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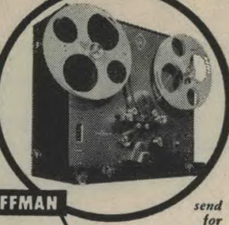

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ARTHUR E. GAVIN
Editor

Sworn to and subscribed before me this 30th day of September, 1953.

C. K. Buchanan
Notary Public
(My commission expires October 10, 1956)

PRECISION EDITOR

(Continued from Page 564)

beam is deflected upward; the image is erected so it will appear erect on the screen; and, finally, the light beam is deflected forward, above the top of the rotating prism housing, to the screen.

In Fig. 1 the projection lamp and condenser lens are inside the housing nearest the screen. Thence the light path is forward, through the film, toward the operator. Having passed through the film, the light proceeds to and through the rotating prism under the circular housing. On the near or left side of the circular housing can be seen the turret arrangement within which are the projection lens and three stationary, triangular prisms. From the top of this little turret the light beam is projected straight across the prism wheel and lamphouse to the screen.

In operation, this mechanism produces a screen image that is always in frame. The image is free from flicker even at the low projection speed of 2 frames per second; successive frames appear to merge into one another. This of course is what they do, since there is no shutter.

This nonintermittent projection system needs no gate and has none. At no point in the film path does the picture area come into contact with any mechanical surface. Operation is vibrationless. At speeds up to 24 frames per second operation is absolutely silent; at higher speeds some machine noise may become apparent.

Because projection is nonintermittent the film can be brought to full speed from a standing start within one frame without danger of damage; and it can be stopped and reversed in direction with similar rapidity without danger of damage. With intermittent projection, or with a projection gate, this would be impossible.

The soundhead in Fig. 1 is the panel assemblage closest to the operator. The curving hood at the front of the panel houses the exciter-lamp. Since the film motion is lateral, this is a lamp with a vertically-disposed filament. It is of 6-v, 1-amp rating, and powered by a superaudible a-c frequency. The photoelectric cell is inside the drum just to the rear (right) of the exciter-lamp housing.

The comfort of the editor or other operator has been fully considered. The foot pedals in Fig. 2 are cable-connected, and enough slack in the cable has been provided so they can be drawn forward, out from under the machine. For example, the continuity girl might put her typewriter alongside the film editor and these foot pedals under her typing table.

Figure 3 shows the film editor in use. The operator is relaxing comfortably, with his right hand on the synchronization control. The resynchronizing frame counter can be seen clearly just to right of the exciter-lamp hood; on the other side of that same hood is the footage counter and a continuous frame counter. Footage and frame counters can be reset manually to zero at any time.

The Precision Film Editor is available for 16mm as well as 35mm film, and also for 17½mm; but not as yet for ¼-in. tape. A magnetic soundhead has been designed, and can be added to the equipment shown in these pictures. Provision has also been made for using headphones, when desired, in place of the loudspeaker so the equipment can be used in a noisy location without disturbance to others or distraction to the user.

The foregoing article is reprinted with permission from the *Journal of the SMPTE* for March, 1953—Ed.

NEW ASSIGNMENTS

(Continued from Page 563)

- ● Norbert Brodine, "Crown Theatre," Bing Crosby Enterprises.
- ● Dan Clark, "Favorite Story," Ziv TV.
- ● Edward Colman, "Dragnet," Mark VII Prods.
- ● Robert DeGrasse, "Make Room For Daddy," D.P.I. and Marterto Prods., Inc.
- ● Karl Freund, "I Love Lucy" and "Our Miss Brooks," for Desilu Prods.
- ● Fred Gately, "Big Town," Gross-Krasne Productions.
- ● Burnett Guffey, "Ford Theatre," for Screen Gems.
- ● Russell Harlan, "Playhouse of Stars" for Meridian Productions.
- ● Benjamine H. Kline, "Fireside Theatre," Frank Wisbar Productions.
- ● Jack MacKenzie, "The Hank McCune Show" for Video Pictures, Inc.
- ● William Mellor, "Adventures of Ozzie and Harriett," Stage 5 Productions.
- ● Ernest Miller, "Hopalong Cassidy," William Boyd Productions.
- ● Virgil Miller, "You Bet Your Life," (the Groucho Marx Show), Filmcraft Productions.
- ● Hal Mohr, "The Joan Davis Show," Joan Davis Productions.
- ● Kenneth Peach, "Ramar of the Jungle," Arrow Productions.
- ● Robert Pittack, "Cavalcade of America," Jack Chertok Productions.
- ● Mack Stengler, "Life With Elizabeth," Snader Telescription Corporation.
- ● Harold Stine, "Superman" for Superman, Inc.; also "Lassie" for Robert Maxwell Associates.
- ● Walter Strenge, "My Little Margie," Roland Reed Productions.
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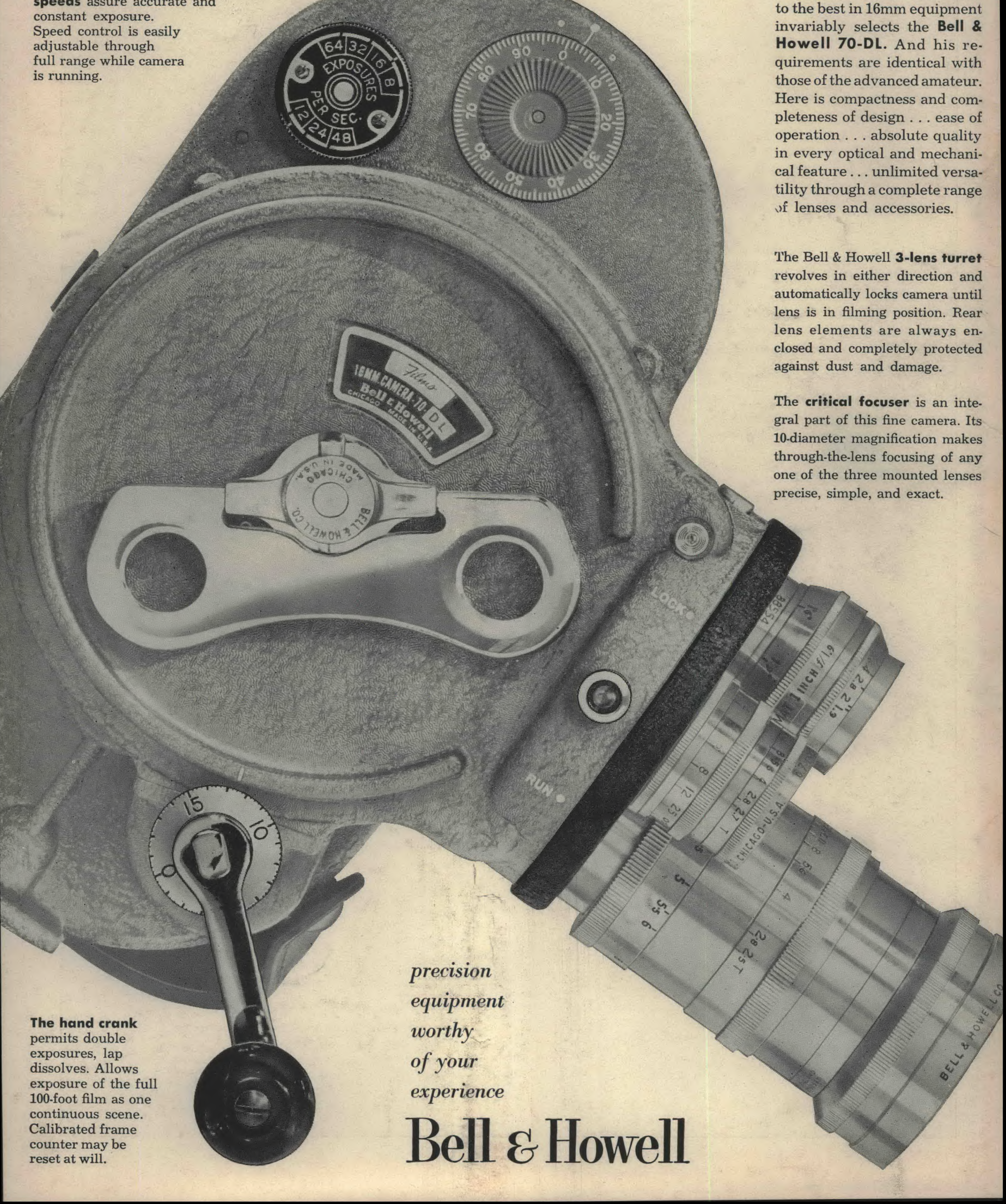

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